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April, 1944

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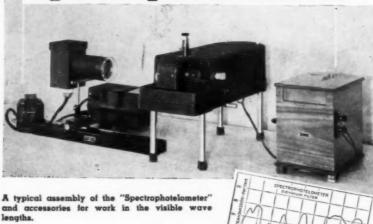


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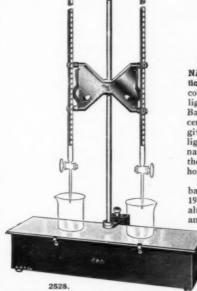
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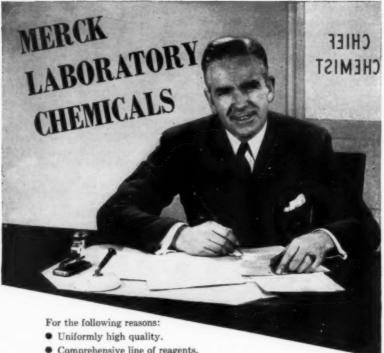
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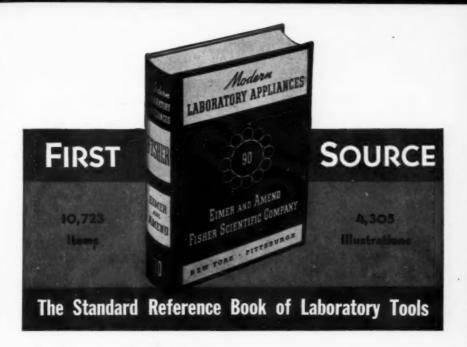
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Willard H. Dow Awarded Gold Medal of A. I. C.



DR. WILLARD HENRY DOW, who found out how to make enough magnesium to produce thousands of fighting airplanes, and enough styrene to supply our needs for synthetic rubber, has been selected to receive the Gold Medal Award of the AMERICAN INSTITUTE OF CHEMISTS for the year 1944.

Dr. Dow is president of the Dow Chemical Company, Midland, Michigan, succeeding his father, Dr. Herbert Henry Dow, its founder. The medal is to be presented at the annual meeting of the Institute in the Biltmore Hotel, New York, N. Y., on May thirteenth.

In receiving this award, Dr. Dow becomes a member of a distinguished company of former medalists, including among others Andrew W. Mellon, former secretary of the treasury; James Bryant Conant, president of Harvard University; Marston Taylor Bogert, professor of chemistry at Columbia University, and Frederick G. Cottrell, noted inventor.

Dr. Dow's inventions and develop-

ments in magnesium and synthetic rubber are of immediate and tremendous importance in winning the war, but they are only two of many noteworthy achievements. Dr. Dow is regarded as one of the foremost leaders of research in the country. His vision has opened new avenues of chemical development and has encouraged and inspired young chemists to greater endeavors.

Dr. Dow was born at the scene of his present labors, Midland, Michigan, January 4, 1897. His entire training was calculated to fit him for his present position. He was graduated from the University of Michigan, in 1919, as a Bachelor of Science in chemical engineering, and went to work for the Dow Chemical Company in the same year. In 1922 he became a director and general manager of the company. Upon the death of the elder Dow, in 1930, Willard Dow became president and general manager. He is now head also of a number of associated companies which have put into practical operation many of his inventions.

Dr. Dow is a member of the Advisory Board of Chicago Procurement District, Chemical Warfare Service; a director of the American Chemical Society, and a member of the American Institute of Chemical Engineers. He is a thirty-third degree Mason and holds a number of honorary degrees from various universities.

New York Chapter Invites Annual Meeting Guests

A meeting of the New York Chapter of the INSTITUTE will be held Friday evening, May 12th, on the 26th floor of Number 2 Park Avenue. Members of the INSTITUTE who plan to attend the Annual Meeting on Saturday, May 13th, are cordially invited to come to this meeting of the New York Chapter. Speakers are W. S. Thornbill of the Shell Development Company, "New Chemicals by Shell"; and T. I. Thompson of Corning Glass Works. "Wartime Developments in Industrial Glass."

Hercules Re-elects Directors

Hercules Powder Company re-elected all of its directors for the ensuing year at the annual stockholders meeting held in Wilmington, Delaware, on March twenty-first.

Special Announcement

Dr. W. T. Read, F.A.I.C., chief of the Professional Allocations Section of the National Roster, War Manpower Commission, will attend the INSTITUTE Annual Meeting, and will discuss the present Selective Service deferment situation individually with members of the INSTITUTE.

Employers Employee Relationships

Raymond E. Kirk, F.A.I.C., Chairman of the Committee Appointed by the Institute to Study this Subject.

The National Council of The American Institute of Chemists recently appointed a committee to consider the employer-employee relationships of chemists, and is obtaining legal advice on this subject. The preliminary report of the Committee appears below, and every member of the Institute is cordially invited to send in comments or suggestions to the Institute, so that any action taken may be an expression of the wishes of the Institute as a whole. This report will be discussed at the Annual meeting to be held on May thirteenth.

IT is respectfully recommended to the Council of the AMERICAN IN-STITUTE OF CHEMISTS that the following policy be adopted by the Institute regarding employee-employer relationships of chemists:

 A strong professional group or groups should be available to represent employed professional chemists (Professional Chemist means one who is eligible to either grade of membership in the A. I. C.)

A vigorous campaign should be instituted to educate management in the desirability of professional societies for professional employers as distinct from labor unions.

3. The A. I. C. should confer

with the other existing societies in the field of Chemistry regarding a common policy for the guidance of employed professional chemists.

 It seems desirable to establish in conference with other professional societies both a common policy and a common phrasing of that policy.

 Professional societies should study very carefully possible ways in which they can aid their employee members in problems concerning their relationship to management.

6. The A. I. C. should promote a system of minimum salary schedules for various classes of chemists, dependent on training and ability, and should then suggest to employers through publicity, or otherwise, the desirability of such minimum schedules for their professional chemists.

7. The A. I. C. should urge upon management the importance and desirability of providing contributary annuities for professional chemists on a definite contractual basis. The A. I. C. should obtain, prepare, and publish information regarding desirable forms for such annuities.

 Employed professional chemists should be encouraged to affiliate with professional groups in the interest of professional solidarity.

THE AMERICAN INSTITUTE OF CHEMISTS Twenty Second Annual Meeting THE HOTEL BILTMORE • NEW YORK, N.Y. SATURDAY • MAY 13 • 1944

- PROGRAM -

- 11:00 a.m.—Registration. Music Room. First Floor. Informal Reception. 12:00-1:30 p.m.—Luncheon Meeting of the National Council.
- 2:00 p.m.-Annual Meeting. Music Room.
 - -Dr. Gustav Egloff, President A.I.C.; Director of Research, Universal Oil Products Company, "Report for the Past Year: Plans for the Next".
 - —Dr. Harry S. Rogers, President, Polytechnic Institute of Brooklyn, "Attributes of a Profession".
 - --Dr. Harvey N. Davis, Chairman, Office of Production Research and Development, W.P.B., Washington, D. C.; President, Stevens Institute, "Victory Through Technology".
 - —Dr. M. L. Crossley Director of Research, American Cyanamid Company, "Defining the Chemist".
 - —Dr. Raymond E. Kirk, Head, Department of Chemistry, Polytechnic Institute of Brooklyn; Past Chairman, New York Chapter, A.I.C., "Emloyer-Employee Relations".
- 4:30 p.m.-Annual Business Meeting.

Presentation of the Medal of The American Institute of Chemists to Dr. Willard H. Dow.

- 6:30 p.m.-Reception to Dr. Dow and guests.
- 7:30 p.m.—Presiding, Dr. Gustav Egloff, President, A.I.C.
 - —Col. Bradley Dewey, Rubber Director, War Production Board, "Dow and the War Effort".
 - -Dr. Mark E. Putnam, Vice President, Dow Chemical Company, "Willard H. Dow-the Man".
 - -Mr. Sidney D. Kirkpatrick, Editor, Chemical and Metallurgical Engineering, "Willard H. Dow-the Chemist".
 - —Dr. Willard H. Dow, President, Dow Chemical Company, Medal Acceptance Address.
- Ladies invited Subscription to Dinner, \$5.00 Dress optional (including gratuities and tax)

Patents in the Postwar World

Charles W. Rivise, F.A.I.C.

Chairman, Patents Committee, Technical Association of the Pulp and Paper Industry. (Paper read at annual meeting)

Patents are the key to our technology; technology is the key to production; production is the key to victory.

President F. D. Roosevelt, April 17, 1942.

PATENTS have in the past proved to be the best means devised by man to stimulate and encourage inherent ingenuity and inventiveness of the American people. They have also proved to be the best means to stimulate and encourage the vast investment of capital necessary for industrial research and for the development of new products and processes.

Invention and industrial research have been responsible to a large extent for the high standard of living to which our people have long been accustomed. They will be even more essential to a high standard of living in post-war America than they have been in the past.

It follows, therefore, that post-war planning would not be complete without taking into account the question
of patents and the role that they will
play in the post-war world. However,
before we can intelligently discuss the
role that patents will play in the perriod to follow the war, we must first
consider whether our patent system as
we now know it will survive the war.

Within recent years, the patent system has been subjected to attacks from many quarters, and there has been considerable agitation for radical reforms. The Justice Department has adversely criticized the system under which patents are granted and the manner in which patentees have exercised their patent rights, and has carried on a crusade against the alleged abuse and misuse of patents. The courts have invalidated one patent after another on very technical grounds and have greatly restricted the rights of patentees.

Committees and commissions without end in and out of Congress have critically examined the system and have made various recommendations, many of which would undoubtedly do more harm than good. Columnists and feature writers with little or no knowledge of the workings of the system have drawn freely on their imagination and have written misleading articles as to the role of patents in our national life.

It is not strange, therefore, that the general public is badly confused on the subject of patents, and that many people are inclined to the view that our patent system is in grave danger of being abolished or radically changed.

In recent months I have received letters from various persons and organizations warning me that unless something was done immediately, the patent system would be a thing of the past. The other day a woman went from one patent attorney's office in Philadelphia to another—a modern feminine Paul Revere—to arouse the profession to take action against the impending abolition of patents.

At one time I was one of those who feared that the patent system was in grave danger of being radically changed. The recent warnings of impending changes have, however, caused me no particular alarm. A re-appraisal of the situation and of the many factors involved has caused me to take a calmer view of the matter, and it is now my opinion that there is no imminent danger that the patent system will be radically changed.

It is yet too early to relax vigilance, in fact vigilance should never be relaxed, but all the indications are that our patent system will survive this global war with relatively minor changes.

In studying the patent system, we must not lose sight of the fact that it is an integral part of our Federal Constitution, and is one of the oldest of our democratic institutions. We must not lose sight of the further fact that, like our other democratic institutions, it has throughout the years

successfully withstood one furious and violent attack after the other, and that despite all these attacks it is still the best and most just patent system anywhere in the world.

We must, in all fairness to the present administration in Washington and also because it bears on the problem, realize that, contrary to popular belief, the present attacks and adverse criticisms of our patent system were not started by the so-called New Deal. The system was under attack long before there was such a thing as the New Deal.

Furthermore, as I shall show, many of those who have taken an active part in the attack cannot by any stretch of the imagination be termed either "reformers" or "New Dealers." It is an incontrovertible fact that one of the staunchest defenders of our patent system and of the rights of the individual inventor is Patent Commissioner Coe, who was appointed by President Roosevelt.

Proposals for radical changes in the patent laws such as compulsory licensing, and the removal of the safeguard of secrecy as to pending applications are much older than the present administration. The Justice Department started on its crusade against the abuse and illegal use of patents prior to the election of President Roosevelt and long before Thurman Arnold became Assistant Attorney-General.

The Supreme Court started on its present trend of invalidating patents and restricting the rights of patentees ten years before there was a single Roosevelt appointee on the bench. Several of the recent adverse decisions were in fact written by the more conservative judges. Chief Justice Stone wrote the majority opinion invalidating one of the Marconi wireless patents, and two of the so-called New Deal judges vigorously dissented.

It is true, that a great deal of the present antagonism against patents is due to sincere but nevertheless misguided reformers, who blamed the system for certain abuses and illegal practices on the part of a small minority of patent owners. Part of the blame for the adverse criticism of patents must be placed on those patent owners who have endeavored to use their patents as a shield to hide flagrant violations of the anti-trust laws, thereby discrediting the patent system and furnishing the excuse or justification as well as the occasion for many of the attacks.

A fact, which seems not to be generally known is that many of the attacks on the patent system have come directly or indirectly from short-sighted industrialists, who sought to destroy or emasculate the system in the belief that they would thereby be enabled to pirate with impunity the inventions of their competitors, but who did not seem to realize that a weakening of the system would also destroy their own patent protection.

In the 1850's, Day, the most flag-

rant violator of Goodyear's vulcanization patent, petitioned Congress to annul the patent, and even went so far as to memorialize Congress to repeal the patent law. In the gay nineties, a group of disgruntled farmers, stirred up by certain manufacturers who were enjoined from making barbed wire fences covered by patents, swarmed into Washington and beleaguered Congress to abolish patents. In 1936 four largest automobile manufacturers petitioned the Supreme Court to reverse a decision in favor of an independent inventor, whose invention had been pirated under very flagrant circumstances, though the invention in question had absolutely nothing to do with automobiles.

More recently, a very prominent manufacturer of automobiles, though entirely out of sympathy with the socalled New Deal, cooperated with the Justice Department at the hearings before the Temporary National Economic Committee in an attempt to discredit the patent system.

There are many signs that lead me to the conclusion that attacks on the patent system are slackening, and that the system will survive the war without any major changes. A straw in the wind is the fact that several Circuit Courts of Appeal have criticized "the flash of genius test" for invention laid down by the Supreme Court. Another hopeful sign is the fact that the Supreme Court in the last few decisions split sharply on such ques-

tions as patent validity and the rights of patentees.

Then there is the fact that the President, instead of endeavoring to put into effect the drastic program of patent reform recommended by the Temporary National Economic Committee, appointed a very conservative National Planning Committee to investigate the patent system.

It is very significant that the Commission has presented a very conservative program for patent reform—a program, which in certain respects is more conservative than the program of reform sponsored by the National Association of Manufacturers. The recommendations of the Commission are much more conservative than the program adopted by the American Bar Association.

Likely and Unlikely Changes In Patent System

As I have stated, it is my opinion that the patent system will survive the war without any major or radical changes. Changes will, of course, be made but only to streamline the system and to bring it more into step with the present rapid progress of industrial development.

The features which have stimulated and encouraged inventiveness and the filing of applications will for the most part be maintained. Some of the defects which have tended to discourage the investment of risk capital in new industrial developments will be gradually eliminated. What the actual changes will be is indicated by the report of the National Planning Commission. However, it is my opinion that only a few of the concrete recommendations of the Commission will be adopted within the near future, if ever.

Within the past few years, certain changes were made in the patent laws in an effort to speed up the process of obtaining a patent. For instance, the permissible period of public use prior to filing of a patent application was cut from two years to one, and the Commissioner was given the discretion of requiring applicants to respond to office actions in less than the six months previously allowed.

In the post-war period and perhaps even before the war ends, patent procedure will be further streamlined. The Examining Corps of the Patent Office will undoubtedly be increased when the man power shortage ends. The facilities of the Patent Office for searching the prior art will be improved, the reclassification of patents will be further extended, more technical books and periodicals will be obtained, and the examiners will be enabled to spend more time on each case.

The streamlining of Patent Office procedure and the improvement of the facilities for searching will enable the Examiners to act more promptly and more efficiently on applications. Furthermore, in order to prevent dilatory tactics on the part of applicants, the life of patents will be restricted to twenty years after filing, but in no case more than seventeen years after issuance.

The Patent Office will probably endeavor to raise its standard of patentability to approach the high standards set by the courts. The presumption of validity of issued patents would thereby be raised, but there is a great danger in raising the standard of invention too high. The standard in the courts is already too high and must be lowered to a common-sense level. For, under the present "flash of genius" standard of invention, even men with the inventive capacity of an Edison, a Baekeland or a Steinmetz are but mere mechanics or chemists applying their trades by rule or rote.

If the Patent Office raises its standard too high, the Supreme Court will have very little opportunity to adjust its standard to a reasonable level. For, under present procedure, the validity of a patent cannot be tested until it is granted. Hence, it is my opinion that the Patent Office should resolve every reasonable doubt on the question of patentability in favor of the applicant, and should not apply too strictly the so-called negative rules of invention.

Incidentally Patent Planning Commission has recommended the enactment by Congress of a declaration of policy that patentability shall be determined objectively by the nature of the contribution to the advancement of the art, and not subjectively by the nature of the process by which the invention may have been accomplished.

Such a declaration of policy would not be of any particular assistance in a large proportion of the cases in the Patent Office. For in many cases the importance of the invention does not fully appear until some time after the patent issues.

The necessity for a statutory declaration of policy may be rendered unnecessary by a swing of the pendulum. As I previously stated, several Circuit Courts have criticized the "flash of genius" test of invention, and several of the judges of the Supreme Court in a recent case vigorously dissented from the views of the majority as to the question of patentability. It is within the realm of possibility that the Supreme Court will in future litigation give more weight to the importance of the step taken by the patentee than to the question as to whether or not the invention involved the incandescent spark of genius.

Interference procedure has been considerably simplified in recent years, but hardly enough to meet adverse criticism. I have no doubt that the Commissioner of Patents and his associates will further simplify and shorten the proceedings. The proposed statute limiting the life of a patent to no more than twenty years after filing will undoubtedly, if adopted, have

¹An interference is a proceeding in the Patent Office to determine which one of two or more rival inventors is the first inventor and hence entitled to the patent.

a tendency to shorten those interferences which are deliberately delayed by the parties.

A committee of patent attorneys is sponsoring a bill (H.R. 3264) to abolish interference proceedings in the Patent Office. The Commissioner would select from the interfering applicants the one to receive the patent, and the others would have to institute court action to cancel the patent and to have a second patent issue.

The proponents of the bill contend that the present interference practice constitutes a bottle neck in the Patent Office and delays the issuance of the patent so that it expires later. The difficulty with the argument is that only a handful of patents are actually delayed because of the present interference procedure, and the adoption of the bill, whereby patents would in no case be granted for more than twenty years after filing, would adequately take care of the situation.

Furthermore, since the Commissioner would have to decide without the benefit of any testimony who should get the patent, his decision would at the most be a guess, and a second patent would in many instances have to be issued later, perhaps years later.

There are several particularly bad features in the proposed bill. Applicants would have their applications rejected on pending applications as well as on issued patents, and would be entitled to see the rival application without any provision for safeguarding the prior applicant. The Commissioner would be permitted, as previously stated, to issue the patent to one of the applicants, not necessarily the first, and the unlucky party would have to file suit in the district where the successful party resides.

Under the present procedure testimony is taken before a notary and at the convenience of the parties and witnesses. For instance, the attorneys for the parties may assemble in the office of one of the lawyers or in the plant where the inventor or the witnesses work, and witnesses need be called away from their tasks just long enough to testify.

The testimony is submitted to a Board of Interference Examiners, who are experienced not only in technical matters but also in weighing evidence. The parties as a rule have faith and confidence in the Patent Office tribunals, and usually accept their decisions without appeal to the courts. In most cases where appeal has been taken, the original decisions of the Patent Office have been sustained by the courts.

Under the proposed new practice, the unsuccessful applicant in the Patent Office would have to take his witnesses and his exhibits into a strange court, in many cases hundreds or thousands of miles away from his home. In addition to bringing a patent attorney with him, who is familiar with the technicalities of the invention, he would have to hire a local

lawyer, whom he does not know and in whom he may have no confidence.

The case would be heard by a judge, or a master appointed by the judge, neither of whom would be familiar with the technical subject matter, and there would be interminable delays before a final decision, during which time his rival would have the patent. The expenses connected with the new procedure to say nothing of legal fees would make the proceeding a luxury to be enjoyed only by well-financed corporations and their attorneys.

Appellate procedure from decisions of the Patent Office tribunals will probably be simplified. At the present time, an applicant when he is refused a patent by the Patent Office Board of Appeals may appeal further to the Court of Customs and Patent Appeals or sue the Commissioner in a Federal Equity Court. One of these parallel procedures will likely be eliminated.

A single court of patent appeals may finally be established, which will handle appeals in infringement suits from all the eighty-four District Courts. This reform, recommended by the Patents Committee of Tappi in 1931, will do much toward the establishment of a uniform standard of invention, particularly if the same court of appeals is given jurisdiction of appeals from the Patent Office.

In the more distant future, provision will be made for the revocation or cancellation of improperly issued patents. The Commission recommends that within six months after the issuance of a patent, any member of the public be accorded the opportunity to challenge the validity of the patent by means of a cancellation proceeding.

At the present time, a member of the public has no opportunity to challenge a patent, unless he is sued or threatened with a suit for patent infringement. The recommended procedure would be in the Patent Office, and would involve much less expense than a suit in court.

The Patents Committee of the National Association of Manufacturers recommends that, instead of revoking or cancelling a patent after it issues, pending applications be thrown open to public inspection before issuance to permit the public to submit evidence against the grant of the patent. This, I believe, is a very dangerous practice.

There are some companies, fortunately few in number, that originate very few industrial developments of their own, but are always ready to reap where they have not sown. The opening of their competitor's applications would prove a bonanza to this type of company, and correspondingly increase the number of pirated inventions and court litigation. Furthermore, the individual inventors and small industrial establishments would be at a disadvantage, because of the

cost of obtaining copies of all opened applications in their field of endeavor.

In this connection, it is interesting to note that oppositions to the grant of patents in such European countries as Germany gave rise to a racket. Prospective patentees in many cases had to buy an opposer's silence either with money or with a free license.

In the post-war world the Justice Department will undoubtedly continue its campaign against cartels and the illegal use of patents—but with much less fanfare. The courts will scrutinize all patent pools and restrictions on the use of patents, and agreements which are definitely not in the public interest will be set aside. To facilitate the investigation of illegal patent agreements, all agreements containing restrictions as to territory, price or quantity will have to be recorded in a public place, very likely the Patent Office.

The so-called Kilgore Science Mobilization Bill is concerned with patents only indirectly, and hence I will refer to it briefly. Industrialists and many scientists have been greatly disturbed that the Government will take over all the research facilities of the country. It is my opinion that industry has it in its own power to prevent this by taking the initiative away from the Government. There have admittedly been certain abuses in the past in the use of the results of scientific research, and the excuse as well as the

occasion for Governmental interference may be obviated in large measure by the voluntary elimination of the abuses.

Future Role of Patents

There has been a recent tendency on the part of many industrial establishments to attempt to protect their inventions as trade-secrets. This has been in large measure due to the attacks on the patent system and to the uncertainties of patent litigation. I feel certain that the trend in the postwar world will be away from trade-secrets and toward patents.

For in the usual case the protection of a patent is much safer and much more certain than that afforded by practicing an invention as a tradesecret, and as the attacks on the patent system slacken, the advantages will be more and more in favor of obtaining patent protection.

Patents will, therefore, play a very important role in the period that will follow the war, and the industrial establishment that does not adopt an adequate patent policy will be left behind in the post-war race for new products and new processes.

Earlier, I outlined a plan for creating and maintaining a favorable patent situation.

Briefly stated, a patent policy to be adequate should not only be continuous but it should also be coextensive with the scope of the organization's industrial activities. No new product, process or machine should be developed to the commercial stage without a thorough investigation of the patent situation.

If the investigation uncovers unexpired, valid patents that may be infringed by the new development, the patents should be bought or licenses obtained before making any considerable outlay for materials and tools. If the investigation indicates that the development involves invention, patent protection should be secured without undue delay.

Inventions developed within the organization are the least expensive in the long run, and the wise industrialist will encourage and stimulate his employees to make inventions by the adoption of a liberal policy of additional compensation for worthwhile inventions.

A fact that should not be overlooked is that the United States government has acquired by seizure or agreement many inventions covered by applications and patents. Licenses under these inventions may in many cases be obtained at small cost.

In conclusion I wish to state that the enlightened industrialist will use the results obtained in his research laboratories to render available at the earliest possible date new and better products at less cost, and will not use his patents to curtail production or to maintain prices at an unwarranted level.

It is the public that eventually pays the cost of research, and the purpose of our patent system is to serve the public interest and not to make private fortunes. Furthermore, any misuse of the results of research and of the patent privilege gives all industry a black eye and inevitably brings forth programs for radical reforms.

The Institute Emblem

The American Institute of Chemists:

I have received so many inquiries regarding the insignia on the key of the INSTITUTE that I have decided to ask for an explanation...

-HARRY J. ERICKSON, F.A.I.C.

Answer:

The insignia of the INSTITUTE is derived from two alchemical symbols. The center design means "the essential thing" which is surrounded by a circle symbolizing "all embracing." This design, submitted by Dr. D. D. Berolzheimer, was chosen in 1935.



John H. Yoe, F.A.I.C., professor at the University of Virginia, recently completed a speaking tour which covered sections of the American Chemical Society at Vassar College, Rensselaer Polytechnic Institute, Syracuse University, the University of Rochester, and at the Memorial Art Gallery in Rochester, and in Binghamton.

Unionism and Professionalism

Herman A. Wagner

Past President, American Institute of Engineers.

I SHALL discuss the general trend toward regimentation of the technological professions and bureaucratic control of technology. The most obvious indication of that trend is the absorption of technologists in heterogeneous labor unions.

This trend has been accelerated by the Wagner Labor Relations Act, but the motivating force is the unsatisfactory condition that exists in the base of our professional pyramid—the lack of unity in the profession. As a result, we have a crumbling base and an unstable apex. While I admire a "flying buttress," I hold no brief for a "flying apex," and that is the condition that is rapidly developing.

If I abuse you, it is because I want to help you. I have helped you... at least I have tried to. I have given the greater part of the last eighteen years to a study of your problems—counseling with you individually and in groups, and cussing your passivity.

I shall adopt Phil Baker's take it or leave it technique, starting with a simple \$1.00 question, and doubling the shots up to the \$64.00 question.

So, on with the \$1.00 question. It's a pushover!

Why Do I Want To Help You?

I am not one of those who believe that the economic status of young chemists, engineers and architects will be improved if they are allowed to touch a stuffed shirt, in lieu of a healer's garment.

Neither do I agree with those who believe that the conditions existing in the base of our professional pyramid concern only the sub-professionals, or that conditions can be corrected by sympathy and inspiration of their BIG BROTHERS. You fellows are confronted with a condition. NOT a theory. That condition menaces the leaders of the profession just as much as it does you.

Well, that was easy. Now for the \$2.00 question.

Do the Professions Know What They Want?

We have seen that the apex of the pyramid is threatened by the disintegration of the base. Leaders of the profession admit that conditions in the base are unsatisfactory. They know that there is rubble mixed with professionalism in the foundation of the profession. That employment condi-

tions in the base are unsatisfactory. That the "rubble" and the "malcontents" in the base, taking advantage of the Wagner Act, are dismembering the professions and moving toward amalgamation of all subprofessionals with non-professionals in labor unions. Leaders of the profession, and their "professionally minded" subordinates believe that something should be done to improve conditions, but all of us are scared out of our pants by the thought of unionism.

We need to understand first of all that "collective bargaining," which the Wagner Act promotes, is an inclusive term, and unionism only one form of collective bargaining. That "labor unionism" is simply one technique and manifests itself in many forms. The tactics range from those of the "Actors Equity," for instance, to those of John L. Lewis, whatever union he happens to be leading. What you members of the technological professions are somewhat blindly seeking is "collective bargaining" that conforms to the principles of professional conduct.

You want to bargain collectively in an organization that you, yourselves, and not the labor unions control. You want collective bargaining unhampered by the restrictions and compulsions that the Wagner Act entails. But you don't yet know that you want this kind of collective bargaining.

Leaders of the profession do not

discriminate between collective bargaining and unionism. Even in their fear of "unionism" they are concerned over the less menacing aspects. Their attitude toward "unionism" is based on a false conception of professionalism, They believe that "professionalism" is a sort of badge, when in reality it is a pledge. Professionalism is a blend of qualifications and attitude—it entails aptitudes and special training and a certain attitude toward work and toward society. Professionalism is not a synonym for eminence.

There is a conflict between professionalism and labor union membership, but only if union membership becomes general. If all young engineers must enter the profession by practice in fields controlled by non-professionals, if labor unions made up of non-professionals may, by granting or withholding membership, permit or deny these young men the right to practice in such fields, professionalism will be destroyed.

It will be destroyed because the professions have failed to claim and defend an essential prerogative—the right to determine membership qualifications, to control entrance to the profession. Professionalism will be destroyed if a majority of the members in the beginning grades of practice participate in, or tacitly approve, coercive tactics of unions that are inconsistent with the fiduciary obliga-

tions that professions lay upon their members.

These are not the arguments advanced, or even recognized by leaders of the profession. Sentimentalists instead hope to stem the tide by warning young engineers that they will "lose their birthright," forfeit "professional status." This is an Oriental attitude and argument. What they really mean is "You will lose face." To those who think that being "professional" means being pompous, this is the ultimate tragedy. Actually there are hundreds of top-ranking executives today who carried union badges at one stage in their careers. Heifetz, Stokowski, Elman, Spaulding, Sir Thomas Beecham, Oscar Levant, Bruno Walter and Phil Baker seem to bear up under such a "stigma" now.

Most unrealistic of all is the advice that emanates from the cloistered halls of engineering education. These men are still living in the "gay 90's" and offering "horse and buggy" advice to men confronted with 1944 conditions. A Detroit professor once said that if he were confronted with the choice of working in a plant where he was forced to join a union, or give up his job, he would not hesitate to give up the job.

In a day when men are frozen to their jobs, and when fugitives from unionism may face the same problem wherever they go, this sentiment is sentiment without sense.

The Professor should get in touch with realities, by visiting the nearby Packard Plant where "all draftsmen, checkers, designers, detailers, tracers, apprentices, blueprint machine operators, engineering record clerks, tool engineers, process engineers, process clerks, plant layout men, and plant layout clerks" were found by the National Labor Relations Board to constitute an appropriate unit for representation by the International Union of United Automobile, Aircraft, and Agricultural Implement Workers of America. He might, thereby, qualify to advise his proteges how to stop the trend, instead of merely deploring it,

These sentimentalists who think of unionism only as a matter of "losing face" consider it the tragedy of the unionized men. Actually the condition menaces the leaders of the profession just as substantially as it threatens the men who are unionized. If unions get control of these subprofessionals and lesser professionals, they will be in position to dictate to executive engineers whom they can hire, what the basis of promotion will be, how many such men they must hire for a given job, what they shall pay, etc., etc.

Seniority, rather than aptitude, training, and attitude, will govern tenure of jobs and promotion. Under such conditions, young engineers coming out of college, or returning to industry from the armed forces, or from closed war plants, can be refused un-

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ion membership and thereby the right to work in the field for which they are qualified. When demand for engineers is weak, the unions can insist that vacancies be filled from their waiting list of "90-day wonders" who have seniority rights.

All this is bad medicine for the employer as well as the employee. Engineering is so much standardized that every top-flight engineer must be supported by the loyal and competent service of men well trained in fundamentals—faithful routineers.

I am concerned about the stratification and dismemberment of the profession as much from the angle of the employer as from that of employees. The fundamental idea of unionism is a threat to the unity of the profession. Unionism accepts as inevitable a conflict of interest between employer and employee—a relentless struggle inherent in the employer-employee relation.

Stratification which first of all sets employers apart and marks them as the natural foe of employees contradicts the most fundamental concept of professionalism, the fiduciary relationship and the fraternalism which must be not a matter of lip service, but a reality.

Stratification which divides the base of the professional pyramid into irregular layers of supervisory employees and subordinates sets up the same conflict within the base.

This is not the way to meet our

common problems and defend our interests against outside pressure. But
the professions have not recognized
the need of organization to meet common problems. We talk about unity;
we think perhaps we should have
some agency to coordinate the hundreds of technological organizations,
but we do not face the fact that we
need to act strongly, purposefully and
concertedly. The kind of organization that the leaders of the profession have in mind was suggested in
Marquand's book, "Labor Relations
on Four Continents."

In that book I found a chapter by one Iwao F. Avusawa, who presumably with a straight face, says that the state dominated labor organization of Japan is called, "The National Friendly Conversation Society of Patriotic Trade Unions." Nothing since "Ten Nights in a Bar-Room" has intrigued me more. Of course, remembering the things that Japan was able to do in November and on December 7, 1941, under cover of protracted "friendly conversation" I suspect that this name would not be too inappropriate for an aggressive labor union in Japan.

"A Friendly Conversation Society" would admirably cover the functions of such an engineering organization as many leaders of our profession consider appropriate for defending the profession and improving the lot of its younger members. I think friendly conversation would be an appro-

priate adjunct to "collective bargaining" for engineers and in an organization restricted to engineers. As an adjunct I heartily approve of friendly conversation, but I do not think that it should be the end and aim of the organization that attempts to shore up the base of the pyramid and thereby save the pyramid's apex.

We have had altogether too much friendly but desultory conversation. For more than twenty years I have listened to the distressed cackling and clucking of old hens of the masculine persuasion, deploring the plight of the poor young engineers, architects and chemists. But they have done nothing wonderful to halt the trend of unionism in the ranks of technology.

Can you take the Four Dollar Question?

Where Does the Wagner Act Fit in This Puzzle?

I have just tried to show you that you don't know, as a profession, what you want. Some of you think that the needs of the men in the base are so urgent that you should seize the advantages that the Wagner Act offers to set up collective bargaining agencies. Some of you see nothing more in it than a threat of unionism, and you blame the Wagner Act for all your troubles. I want to tell you briefly what the Wagner Act does and does not do.

The Wagner Act is not designed or expected to compass or correct all the evils that exist in the general field of labor relations. It is not intended to evangelize to reform either unions or employers except within its restricted field of operation. It cannot make employers grant better pay or working conditions, or accept any contract proposed by workers. It cannot force labor unions to be discriminating in choice of leaders or regulate their internal affairs, except as it may find it necessary to prevent coercion of employees. These faults might porperly be the subject of additional legislation, but they are not within the scope of the Wagner Act.

The purpose of the Wagner Act is succinctly stated in Section 1, in its final paragraph:

"It is hereby declared to be the policy of the United States to eliminate the causes of certain obstructions to the free flow of commerce and to mitigate and eliminate such obstructions when they have occurred by encouraging the practice and procedure of collective bargaining and by protecting the exercise by workers of full freedom of association. self-organization, and designation of representatives of their own choosing, for the purpose of negotiating the terms and conditions of their employment or other mutual aid or protection."

The Act sets up the National Labor Relations Board and directs it to

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"insure to employees the full benefit of their right to self-organization and to collective bargaining, and otherwise effectuate the policies of the Act."

The Board in all the responsibilities it carries must promote self-organization of a type that will induce the workers to depend on orderly processes prescribed by the Act rather than on extra-legal and disorderly processes. Therefore the Board must approve such bargaining units as will be strong enough to support the confidence of workers in the methods prescribed by the Act.

Numerical strength is a factor in the Board's determination of "appropriate units." But "cohesiveness" is also a factor. The Board hopes to see established units which are as inclusive as is consistent with "cohesion."

You are, as professional workers, included in the scope of the Act. The Board has so ruled, and frequently affirmed. It has recognized in "technical" or "professional" workers certain special interests which might not be capably served if these employees were included in "industrial" or "semi-industrial" units. But the Board defines "technical" and "professional." In forming "technical" or "professional" units the Board will sacrifice numerical strength to gain "cohesion" and protection of special interests. But it will not separate the "professional" unit into molecules or

atoms, or smash atoms, in order to differential degrees of "professionalism."

The Board is satisfied with a good "amalgam" of "technical" workers. It does not insist upon U.S.-Chemically-Pure-Professionalism in a unit. It wants only sufficient "mutuality of interest" to make a satisfactory binder. More than that, the Board finds it desirable, rather than undesirable, that the "technical" units choose the same representative as their "nontechnical" co-workers. Adhesion, as well as cohesion is a factor in the general set-up.

So this is where you get snagged into the "heterogeneous unions" and it brings us right up to the Eight Dollar Question.

To What Extent Have Unions Already Gained a Foothold in the Profession?

If you asked me "Exactly how many technologists have joined unions?" I couldn't tell you. But enough of them have joined that a trend has been established which, unless it is halted, will forever destroy any chance of professional unity and collective bargaining under your own control.

More significantly, the unionization of technologists under the Wagner Act tends toward fragmentation and stratification of technology.

Although the NLRB has shown an awareness of special interests which

set professional employees apart from their non-professional co-workers, warranting autonomous units, there is no accepted criterion to enable the Board automatically to sift employees and unhesitatingly select the truly professional workers. The professions themselves have failed to establish, by statute or tradition, precise boundaries.

Furthermore, the National Labor Relations Board, while it sees the wisdom of setting up autonomous units, is not at all adverse to having those units select for representatives in bargaining the same union that represents their non-professional co-workers.

Finally, a minority of professionally minded employees must accept such representation, if incorporated in an appropriate unit in which the majority prefer labor union representation.

As a result we have a checkerboard pattern of affiliation—a checkerboard in which the spaces are not squares, because the horizontal and vertical lines are not straight but wavering. Furthermore there are transverse lines crossing the predominant vertical and horizontal divisions. Technologists have become identified with all these types of unions:

 Unions of technologists and technicians (like the International Federation of Architects, Engineers, Chemists and Technicians, C.I.O., or the International Federation

- of Technical Engineers, Architects and Draftsmen's Unions, A. F. of L.
- Unions of white collar workers—United Office and Professional Workers of America, CIO Office Employees Int'l Council, AFL.
- Independent Unions like the Fraternity of Laboratory Workers, or the Marine Draftsmen's Association.
- Craft Unions embracing units of professional workers, like the International Association of Machinists.
- Industrial Unions such as the International Union of United Automobile, Aircraft, and Agricultural Implement Workers Unions, or Chemical and Biological Workers of America.
- 6. Unions of supervisory employees—as for instance The Foremen's Association of America (whose status is a little uncertain at the moment).
- 7. Stratified organizations of "salaried" and "supervisory" personnel, including both technologists and non-technological personnel, usually local or company wide in extent, though sometimes affiliated with a national union.

Some engineers have been swept

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into these organizations by pressure of the "non-professionally minded" who were a majority in particular appropriate units. Some have not struggled very hard. They want the possible increases in pay, they demand protection that the unions promise.

Some of them have been putting up a fight, and calling on engineering organizations for support. And what has been the reaction? But that's the \$16 question.

What Are We Doing, and as Phil Baker would say, "HOW Are We Doing?"

We are doing just about as well as you could expect without a "unified command." There is some guerilla activity. But only one organization has anything that so far could be called a "beach head" and that looks like it might be subject to the difficulties that are recognized at Anzio.

Just about as effective as the maneuvers of the Polish Government in exile are the plans of the registered engineers. Registration has made mavericks of all practitioners below responsible charge. We ourselves, in registration statutes, have said that they are not "professional."

Now the registered engineers offer a non-committal designation, and insert a permissive provision in the laws that would enable the men we have disowned to call themselves "engineers-in-training." But we have made no effort to restrict the field of practice to such "engineers-in-training" as we do restrict the field of responsible charge to registered engineers. As a result, the "rustlers" are rounding up our mavericks with a lot of wild calves that can't even be called "yearlings" because most of them are "90-day wonders."

Technical societies for the most part simply view the situation with alarm and urge the sub-professionals to be of good courage and indomitable resolution and keep the spark of professionalism alive at all costs. They comment on the situation, embodying in the comment suave warnings of the possible reprisals on "malcontents" who seek relief in unionism. Carol down in Mexico is making an equivalent contribution to the defense of Rumania.

State Societies mill around and suggest strategies, and Alabama comes forward with a revival of the doctrine of "nullification" which we thought was buried with John C. Calhoun in the 19th Century. Blithely ignoring the Wagner Act's definition of the phrase, "affecting commerce" and the corresponding scope of authority of the National Labor Relations Board, they say in Alabama, that:

"It shall be unlawful for any executive, administrative or professional or supervisory employee to be a member in, or to be accepted for membership by, any labor organization which permits membership to employees other than those in an executive, administrative, professional or supervisory capacity."

The Act defines "professional" work as "predominantly intellectual and varied in character as opposed to routine mental or manual work, requiring consistent exercise of discretion and judgment, and of such character that the output cannot be standardized." The authors of this Act seem not to have heard of the ineffectuality of this definition—as demonstrated by its inadequacy in the administration of the Fair Labor Standards Act.

What Alabama is trying to do is amend the Wagner Act locally. Proponents of this scheme might better have supported the same kind of clause when it was embodied in the Smith Connally Act last year. The engineering societies, engineering employees and even the unions were indifferent to the subject of unionization of professionals.

American Society of Civil Engineers is the only organization that has attempted to establish a beach-head within the Wagner Act lines. Like the men on the beach at Anzio it has "weather troubles." It has not, I am afraid, properly appraised or perhaps identified the opposition. Its strategy is in question. I am not at all convinced that it has the necessary reinforcements to prevent a sacrifice of

the men who constitute its shock troops.

(Before discussing A.S.C.E.'s proposed plans, I think you will agree with me that any analysis should be impartial, criticism should be honest. sincere and intended to be constructive. In commenting on the Society's plan. I am assuming, of course, that A.S.C.E. intends to bargain collectively for engineers, "in good faith," as provided for in the Act. That it intends to improve the lot of the engineer, and not simply take him out of the unions. If it intends to amend the Act by Evasion rather than by statute, that's a horse of another color, and I shall not discuss that phase of it here.

One point I would like to emphasize and that is this: Any comment that I make can be substantiated by actual cases decided by the N.L.R.B.)

It can, or should, expect opposition from these quarters:

- From the 90-day wonders, men trained for limited technological service in defense industries who prefer labor union "seniority" protection of their precarious foothold in the profession.
- Malcontents within the profession who also want labor union leadership and believe that coercive tactics are necessary to secure economic advantages.
- Labor unions, particularly those that have already absorbed some

of the men that should be incorporated in A.S.C.E. units and labor unions in general who would be reluctant to see A.S.C.E. demonstrate that effective collective bargaining agencies can function with dues of \$1.00 or \$5.00 per member—a figure quite out of line with ordinary labor union dues.

- Reactionaries in their own membership who can attack the plan from within.
- Other technological organizations that may object to A.S.C.E.'s including men of all branches of technology, and trespassing on what these societies consider their own membership domain.

Twenty-nine years ago American Association of Engineers sponsored collective bargaining for engineers employed by the railroads. The Association represented them before the U.S. Railway Wage Board, and by methods perfectly consistent with principles of professional conduct obtained several million dollars in raises for the group. The engineering societies instead of supporting that movement organized the Federated American Engineering Societies to "stop A.A. E." It is this fact which leads me to believe that A.S.C.E. will encounter bitter and devious forms of opposition.

I hope they have properly appraised the possible tactics of the opposition, who may try to convince the National Labor Relations Board that

the Collective Bargaining scheme originated with employers of engineers in A.S.C.E.'s "Committee on Employment Conditions" and the A.S.C.E. Directors who, in Atlanta, initiated the plan. They may bring up the matter of financial support: the maintenance of "organizers" paid by the national organization, and the incidental help that the sections may give in the initial stages of organization of collective bargaining units. Because of the unfortunate term "buffer unit" used in the original draft of the report of the Committee on Employment Conditions, they may attempt to show that such units will be expected to stand, as the committee suggested, "between the employer and the more insistently aggressive employees, particularly those affiliated with labor unions."

They may insist that the employers of engineers in A.S.C.E. are trying to maneuver their employees into a type of union which the employers prefer. A union in which the employees exercise only the right of self-organization and waive collective bargaining rights. If they convince the Board that the Collective Bargaining Committees are unduly responsive to the employers' will the Board will refuse to recognize such committees as appropriate bargaining agents.

The whole strategy of the plan sponsored by the Civils rests on National Labor Relations Board acceptance of the definition of "professional engineering employees" which has been set up as the basis of determination of collective bargaining units to be sponsored by the society and its sections. That definition recognizes experience as a substitute for academic training, but lacking long experience, would make a B.S. degree in engineering a prerequisite of membership. The whole strategy depends on the Board's willingness to accept such arbitrary definition as basis for determination of an appropriate unit.

It must be understood that the Board has complete and final jurisdiction over the determination of "appropriate units" whenever a "question concerning representation arises."

A question concerning representation arises under any of the following conditions:

- When a jurisdictional dispute exists between two or more "labor organizations" with regard to representation of a unit or any part of its membership.
- When the employer refuses to recognize or bargain with the unit until it has Board certification not an unfriendly act, necessarily, because the employer may be guilty of an unfair labor practice if he recognizes a unit which has not been certified and a question concerning representation subsequently arises.

Once a question concerning representation arises, the Board has complete authority to decide upon the appropriate scope of the unit. There is no recourse to the Courts in reference to a Board decision regarding representation or certification as such. The Board decides whether the benefits of collective bargaining will be better served by an inclusive unit, or by granting autonomy. The Board has, not uniformly, but generally recognized the existence of special interests that warrant setting what it considers "technical" or "professional" workers apart in autonomous units.

It will sacrifice numerical strength to promote "cohesion" in the unit, and protect interests which might not be capably served by an inclusive unit. But the Board is not irrevocably comcommitted to such a course, and has approved the inclusion of technical workers in units made up of "office, clerical and technical personnel," and even in "production units."

In non-production units, the professional distinction is made only where the Board finds it appropriate. The Board recognizes such "mutuality of interest" in a laboratory, for instance, that the principles which usually lead it to separate professional from non-professional workers do not apply. Here, where the Board can see almost equal advantages of incorporating professional and non-professional workers in a single unit, or dividing them, the wishes of the "professional" workers may be the determining factor.

If the Board regularly disregarded other factors and drew the lines which

determine the scope of appropriate units strictly in accordance with the "desires of employees" it would be delegating the discretion invested in it by Congress.

Wishes of employees are determinative only when all the other considerations are in balance.

In discovering mutuality of interest as the basis of "cohesion" in a unit, the Board considers many factors. Academic training is but one of these factors. Lack of academic training in a whole group may convince the Board that the unit is not "technical" or "professional" and that the unit may be appropriately included in an industrial unit. It does not follow that the Board will scrutinize each member of a unit adjudged to be "technical" or "professional" and rule out all who fall below the educational level.

To put it concisely, if A.S.C.E. offers its definition as the scale for measuring the eligibility of 100 men in a drafting room for membership in its proposed unit, and 25 per cent of them have had only a "90-day course," there is no assurance that the Board will "orphan" these 90-day wonders and let A.S.C.E. represent only the draftsmen having B.S. degrees or substantial practical training. The Board may consider that a "90-day course" constitutes special training for the particular job.

I could cite you many cases to show that there is extreme catholicity in a "professional" or "technical unit"—that the Board has found "mutuality of interest" between the "errand boy" and "metallurgists" or between "sample boys" and chemists. I can show you that the Board will not accept as determinative the arbitrary membership requirements set up in a proposed unit. It has denied that right to labor unions. Quite recently at Lockheed it refused to recognize as appropriate a "professional" unit built on arbitrary lines.

If you want names and places and precise citations you can get that in a book soon to be published by American Association of Engineers. It will cover intensively and extensively the matters I am discussing tonight only in outline.

The plan that A.S.C.E. proposes cannot help a great many men who need and deserve protection. These are the supervisory employees, and those whose "confidential" or "management" functions cause the Board to regard them as "employers" rather than employees.

All engineers who stand in confidential relations with management are excluded by Board interpretation of the broad terms "employer" and "employee." So are all employees of supervisory grade, as long as the Maryland Drydocks principle stands.

Nor does the Act cover employees of the federal or state governments. Of course, state employees whose work is closely allied with the war effort might be, just possibly, brought under equivalent protection by appeal to the War Labor Board which can handle controversies among groups of employees not covered by the Wagner Act, if such controversies obstruct defense production.

Several considerations make the War Labor Board less attractive as an arbiter than the National Labor Relations Board. In the first place, it is a temporary agency, and any program of collective bargaining which has a long range objective would, it seems to me, function better under the permanent agency.

Second, the strategic position occupied in the War Labor Board by the representatives of the two major unions suggests at least, that professionals who are fighting for autonomy might have a better chance under a completely impersonal agency.

There is still another point of weakness in the Civil's plan that I have not covered. The matter of "reinforcements" protection of its shock troops.

There is a possibility that the men who organize in these collective bargaining units may form an association of "Neck Sticker-outers." While the Act directs the Board to protect employees from discrimination attributable to self-organization and collective bargaining activities, technologists cannot count heavily on such protection. It is more easily achieved in the case of welders, bricklayers, and team-

sters than in the case of technologists. The law theoretically prohibits an employer from discriminating in the matter of either tenure or hiring of employees; the practical aspect of the question is "Can the Board or A.S.C. E. really give such protection?"

Old Andy Jackson was told he could not remove a judge from the bench. So he removed the bench from the judge. He abolished the court. An efficiency engineer can show that almost any engineering job is an unnecessary expense. Engineering work can be farmed out to consultants or laboratories. If you can't fire an engineer from a job, you can remove the job from under the engineer. And with impunity.

In the hiring of engineers not one, but many qualifications are involved. In the question of hire and tenure, the employer who refuses to employ an engineer who has been active in collective bargaining, has more outs from this discrimination charge than a proscribed horse-parlor has exits.

In such unfair treatment the membership lists of bargaining units and the names of men known to belong to heterogeneous units will become the sweetest sort of blacklist for the reactionary employer.

Reactionary employers can discriminate against engineers as they dare not discriminate against other organized groups. Engineering organization is spotty. Organization of welders, teamsters, etc., is extensive enough to

make them formidable. It is the old story—the point made by the stage coach driver who with his whip flicked off dirt daubers on fence posts, but would not touch a hornet's nest, explaining: "One dirt dauber is one dirt dauber—but a hornet's nest... Well, that's an organization."

The right of "self-organization" and "collective bargaining" are sterile unless they result in actual gains for the members of the Bargaining Units. I don't know how far A.S.C.E. is prepared to go in this process, but they should be ready to put capable men at the disposal of the units to help them draw up satisfactory contracts and bargain for their adoption with as few modifications as possible. These advisors will need to know how to gauge demands so that they accord with reasonable general engineering expense: also how salary ceilings affect the situation.

If all bargaining activities result in an impasse, these units, presumably, will be indisposed to bring any sort of economic pressure to bear. Which makes the Wagner Act more or less inappropriate as a basis of operations. Unless this procedure leads to better pay, overtime compensation, paid vacations, protection against arbitrary dismissal or dismissal without notice, and the other reasonable demands that are usual objectives of collective bargaining, engineers will be running fast in the whole process just to stay where they are.

Collective bargaining rights of the Wagner Act will be effective and safe for engineers only when a helluva lot of them are tied up tight in one organization, restricted to professional engineers, and controlled by them, unfettered by the Wagner Act.

Any organization that proposes to lead engineers, chemists and architects to the foot of the rainbow, should be sure that the foot of the rainbow is in the vicinity of Ft. Knox and that the outfit knows the password. That organization should have in it enough men to do something more than set up a perilous beach head. It should be recruited to the strength necessary for an invasion.

But unionism is not the only form of "regimentation" that the profession faces. Indeed, it may be just an adjunct to a much more ambitious program which brings us at once to the \$32 Question.

Must we be Regimented?

That's the question, and unless you do something about it... You'll be S-O-R-R-Y!

And by "we" I mean not only the sub-professionals and professionals threatened by unionism, I mean all of us architects, chemists and engineers. Must we be brought under bureaucratic control? The danger that this will happen springs from the same sins of omission that have already brought unionism upon us, which is sure to dismember the profession.

Society is not fully satisfied with the returns it is getting on tremendous sums invested in training technologists. America knows, as well as Mr. Schickelgruber, that production is the force that effects social security. Of course, America is thinking of production toward the end of jobs for all as the path to security, and, only in the emergency, of production as a factor in military-might to guard us against aggression. Mr. Schickelgruber concentrates on production as a military necessity in a program of subjugating the world. But Mr. Schickelgruber wasn't kidding when he said: "I entertained but one hope, in which I trusted; we placed our confidence in . . . our technicians, chemists, and inventors, and our ability to organize the work of our engines into production."

America has faith in the work of its "technicians, chemists and inventors" too-faith, that properly utilized they will give us real and complete social security. But America doesn't quite know how it is failing to get that full utility. Political leaders who act for all the people have some fantastic ideas for deriving maximum benefit from technology. They are pretty well embodied in the Kilgore Bills to "Mobilize Science and Technology." Proponents of the Kilgore Bills say we must "socialize science and technology" and they have the effrontery to hold up the German type of Mobilization and the Russian type of "Socialization" as ideal for a country that dwarfs them both with an "unregimented" system.

"The only government in the world, I regret to state," said Mr. Kaempffert, "that has used science, or intended to use science to secure social security, social happiness and contentment is Russia... There you find science propagated on all fronts ... irrespective of whether there is any profit in it. The Soviet Academy of Sciences, which is the equivalent of our National Academy of Sciences, is an integral part of the Government, and as much so as our Department of Agriculture or Department of Commerce. It plans the research activities of the entire country and those plans extend right down into every shop . . . So that we have at least an example of what can be done for a purely social purpose. What I like about your bill is that it is the first attempt made in this country, to my knowledge, to look at technology and science in a broad way, and I hope if it's approved by Congress and by the President, that it will not be just a wartime institution, but that it will become a permanent institution; because why should we destroy this elaborate apparatus which is bound to produce much good, and then let ourselves drift along aimlessly as we have in the past?"

Likewise testifying, by request, to the Committee on Technological Mobilization, W. S. B. Lacy, explained the German ideal of "mobilization" of science and technology. He said:

"When the Nazi Party came into power, determined upon the creation of a totalitarian state, it quite logically undertook to establish a labor corporation which it chose to call the German Labor Front. That German labor front, organizationally speaking, integrates German labor into the National Socialist state so as to subordinate all ordinary objectives of a labor movement such as higher wages or better working conditions, to the political objectives of the Nazi state.

... "By June 1933 all unions were taken over by the National Socialist Labor Party. The German labor front was proclaimed in January of 1934 and established then and there as the sole personification of the German labor movement.

"In December 1934 the Labor Front was divided into 18 functional groups, of which one was identified as a professional group.

"By March of 1935 all employers' organizations were incorporated into the German labor front... So by the middle of the second year of Nazi power they had control not only of German skilled labor, and also of German technologists, but also of German employers in a cohesive whole.

"The power of the Nazi Party leaders over the German labor front whatever those powers purported to be de jure, were de facto absolute...

"In February 1935 the Reich Ministry of Labor required each employee to apply for a labor book, without which, after March of 1936, he would be ineligible for employment anywhere in Germany."

Mr. Lacy explained that this registration system gave the Nazi leaders detailed information as to the qualifications and experience of every technologist. The result he says was this:

"By 1936 not only did the German labor front have absolute power over the disposal of German technical skill, as well as skilled labor, but they knew all about it.

This may carry the fragrance of heaven to Mr. Kilgore, but it smells of brimstone to me.

In both Germany and Russia, technology and technologists have been brought under control of a central governmental agency. This agency decides whether technological resources and personnel shall be utilized to produce guns or butter.

We do not believe that the American people want control over technology. We do not believe that they want technology amalgamated in a labor front. We believe instead that America is groping its way toward coordination of technology and fullest use of technological resources.

But coordination and centralization are not the same thing. During the war we have had centralization and if Mr. Wallace can be believed, it has

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resulted in placing 70 per cent of war contracts with less than 100 corporations or companies.

If a managerial economy is thrust upon us, I think that employer engineers will suffer, if possible, more than employees. A managerial economy preserves the figment of private ownership, but removes from the "owner" all control of the "property." Where will our consultants, our executive technologists fit in a scheme of state capitalism, or bureaucratic control over technology?

What is their protection against the trend? Certainly it is not to be found in their own numbers. They are too few. We have depended in the past entirely too much on eminence; too little on numbers.

Executive technologists can resist this trend only in a great organization, staunchly supported by their own loyal subordinates. Such an organization can meet pressure with pressure. The big shots of the profession are entitled to this support only if the organization also looks to the welfare of their subordinates—gives them full and free rights to self-organization and collective bargaining.

Employee engineers have shown no disposition to build such an organization. There are, including duplications, probably slightly less than 75,000 engineers in the leading technical societies. Yet there must be 400,000 men who would today tell

the census taker that they are "engineers," or "chemists." These unaffiliated men need organization and need leadership. Their numbers would support the leaders of the profession in the fight against regimentation. If there is apathy and confusion in the lower ranks, engineering's employers should lead them out of the land of the Egyptians.

One great organization could resist regimentation and safeguard for society the technological resources of the nation.

That brings us to the \$64 question.

What is Technology Going to Do About This?

Your own interests prompt you architects, chemists and engineers, employers and employees alike, to form a great inclusive society. To set up and enforce within that society standards of classification and compensation; to set up also fair rules to govern employment protecting you from dismissal without notice, providing, as do most of the unions, for dismissal pay, for paid vacations, for overtime compensation at appropriate rates.

Your own economic interests prompt you to form such an organization in order to deal with similarly organized pressure groups and to safeguard, thereby, not only your interests but society's.

There is of course another side to the shield. Asking such protection, and organizing to see that you get it, you accept certain corresponding obligations.

The first of these is an obligation to keep up with new techniques. That you will probably find possible only by swarming into the technical societies in unprecedented numbers and soaking up all they have to give and asking for more. Through your organization you will have set up definite boundaries for the professions. You will by statute guard those boundaries against invasion establishing the homogeneity which is necessary to professions. But you will within those boundaries work for the technical proficiency which is another distinguishing feature of professions.

In your organization you will therefore serve society, too, because you have no profession unless the members fully understand, unconditionally accept and capably fulfill social obligations. You will through your technical societies insure an unimpeded and rapid flow of information from the centers of research and development to the men on the jobs. You will see to it that your communities know the investment opportunities that technology provides and that all production resources are fully utilized.

To do this you will cooperate locally with chambers of commerce, with civic leaders of all kinds. You will bring to the farmers the news of government research as it discovers ways

to use products which have in the past constituted embarrassing surpluses. Bring to the hinterlands a knowledge of what the government laboratory in Peoria is doing with corn, and the New Orleans Laboratory with sweet potatoes. You will coach local industries on conservation policies, tell them how to use profitably substances that are now "waste"—the sulphites, sawdust, lignin and other waste products capable of conversion.

You will in a body cooperate with such organizations as the Committee for Economic Development; guide your towns in adopting and amplifying and intensifying the "Albert Lea" technique demonstrated by the Chamber of Commerce of the United States.

By keeping your identity you can become the greatest force for industrial peace interpreting to labor the programs of enterprise, and to management, the needs and justifiable desires of labor. This is probably the greatest of all "conservation" achievement, since it guards against waste of the most perishable of all material resources—men at work.

Your local groups can be most helpful in guiding public opinion in an appraisal of proposed public works. You can see to it that highways are routed, and designed and maintained in accordance with the real needs of the community instead of in line with the pressure of subdividers and politicians who own property in particular areas. You can put your weight on the lever and throw out the vested interests that isolate communities from arterial highways, by demanding that the local structure bear some relation to a national plan.

On a national scale you can bring the white light of publicity on Arthurdales, and Passamaquodies, and Ship Canals, and Canol Oil Lines, at the planning stage before public funds are squandered.

You can exert a powerful influence in the interest of long-range planning of public works that are real investments, not boundoggles.

Locally and nationally you will fight those vested interests that now suppress or obstruct technological development; wallop the obsolete building codes that hinder utilization of new and socially valuable techniques which might give us low cost housing and an unprecedented activity in construction, by exposing the unholy alliance between politics, building material manufacturers and reactionary labor organizations.

Hit the organizations that, to protect investment in older techniques, oppose development of low cost foods.

You must unite to keep your identity as professions; to improve conditions in the base of the professional pyramid; to meet the challenge of pressure groups against the base and the apex. You must unite to insure to society fullest and most beneficient

use of technology toward the end that we may have maximum production, full employment and security for us all.

A great Fraternity of Technologists, including not only architects, chemists and engineers, but geologists, physicists, nutritionists—the whole scientific personnel of the nation is the answer to the problems that perplex you. You are sick of being pushed around by "stuffed shirts" in the profession, by labor unions, by politicians. Will the technological professions organize to defend themselves and society?



Stearns Opens New Laboratory

Frederick Stearns and Company, pharmaceutical manufacturers of Detroit, Michigan, recently opened their new organic research laboratory under the immediate direction of Dr. M. L. Moore, who designed, equipped, and heads this new unit.



New Cellulose Derivative

Hercules Powder Company, Cellulose Products Department, has introduced sodium carboxy-methyl-cellulose, a water-soluble cellulose derivative. Experimental research is being conducted to determine its suitability in emulsions, paints, textiles, and the oil industries.

Which Medicinals Await Recognition?

Walter H. Hartung, F.A.I.C.

Professor of Pharmaceutical Chemistry, University of Maryland.

THE alchemist sought, Midas-like, to convert the baser metals to gold. Paracelsus, who appeared at the transition from alchemy to chemistry, insisted that the object of chemistry is not to make gold but to prepare medicines.

It is rather remarkable that chemistry as we know it today, traces its origins largely to a healthy scientific curiosity about medicines. It was as pharmacists that men like Scheele, Serturner and Pelletier became interested in the substances with which they were dealing, and thus they became known as chemists.

Young Perkin, in the collossal mistake of the 19th century which led to the establishment of the chemical dye industry, had hoped he might prepare quinine by the oxidation of aniline, instead he obtained mauve. Many of the earliest teachers of chemistry were known as professors of chemistry and physick — physick meaning medicine.

Thus we see that chemistry really traces its ancestry through medicine and pharmacy. Sometimes, it seems that our science is not proud of its origin in the apothecary's shop.

At any rate, it is fitting to inquire,

from time to time, into the relationship or interdependence that exists today between medicine and chemistry.

There are several ways in which this question may be approached. There is, for example, the clinical laboratory. A trained chemist takes a drop of blood or other tissue fluid, examines it for abnormalities and irregularities and turns his report over to a diagnostician. The doctor then prescribes for the patient's needs. Sometimes it is a case of hormonal deficiency, say, of the insulin, sex hormone, thyroid, liver extract, or what have you.

Another time it may be over-activity of a gland and other measures have to be taken. No doubt all of you have, at one time or another, been amazed to what extent an insurance company will stake a bet or gamble on a man's life, merely on the say of what the company's chemist finds in a specimen of urine.

This is a phase of medicinal chemistry that fills a serious need but which I shall leave to others more competent than I am to discuss.

I will turn to another aspect of

medicinal chemistry; namely, to those substances which are used for the healing and prevention of disease and the alleviation of pain.

It may be said that every chemical substance is potentially capable of producing one or more physiological responses. Therefore, every compound deserves to be examined for any possible medicinal virtues it may possess.

We can eliminate from consideration those groups known to be without desirable activity. The first of these are the insoluble compounds. It is obvious that a substance which cannot be transported to the site of action has no opportunity to exert its effect. And yet, even here, we must not be too dogmatic. Barium sulfate, extremely insoluble, is useful in photographing the alimentary canal, and to that extent it is certainly a useful drug. On the other hand, methylchloanthrene, dibenzanthracene and related hydrocarbons, notoriously insoluble when measured by customary standards, yet produce cancer in spite of their immeasurable solubility. While they are not drugs, the medicinal chemist is interested in them because of their carcinogenic properties and as something to be avoided.

The next group that we may eliminate consists of those substances which are both soluble and physiologically active, in fact essential for life and happiness, but since they are used in building up tissues and to contribute vital energy, they are classed as foods

rather than as drugs.

The chemistry of foods is a science in its own right. Yet it may not be amiss to point out that the line which divides food chemistry from medicinal chemistry is not clear and distinct, not because the drug store dispenses sandwiches and blue plate specials, but because, as the world learns more about dietetics and nutrition, it is found that many of the food elements are endowed with medicinal or drug properties, and thus they come into the realm of the medicinal chemist.

Vitamins are a case in point; although they are food essentials, we are inclined to look upon them as drugs. Also, we are beginning to find specific medicinal virtues in some of the aminoacids, the building units of the proteins. Definite pathological deficiency symptoms can be produced by withholding some of the aminoacids.

This leaves, then, the large class of substances which are neither inert nor are they foods. Which of these are drugs? Certainly not those which do not promote healing, prevent disease, or alleviate pain.

In fact many of these substances produce just the opposite effects; they produce discomfort or pain, or they may irritate, or they may provoke disease, or they may even result in death. While we may have a justifiable academic interest in them, they are to be avoided as drugs or medicines. They are properly called poisons, and hence do not come into con-

WHICH MEDICINALS AWAIT RECOGNITION?

sideration here. It may be said, in fact, that all the compounds of this group can and do act as poisons, if administered in a large enough dose.

But there are some which produce favorable and desirable physiological properties in doses which are less than the toxic dose. It is in this sub-group that are found the medicinal substances. The wider the margin between the therapeutically active dose and the toxic dose the better for the drug. The ratio between the effective dose and the toxic dose is known as the therapeutic ratio.

What characteristics or properties must a compound possess before it can be looked upon as a drug? First, it must have a therapeutic ratio greater than one, and the larger the better. Second, it must exhibit one or more favorable pharmacological reactions. Third, it must show consistent reliability and dependability in the clinic. Only after it has satisfied all these tests can it be said of a compound that it is a good drug.

Where do our drugs come from? Undoubtedly man early discovered certain virtues in herbs and plants, and perhaps also in many minerals. More recently he has found a wealth of them originating in the chemist's test tubes, and also he has found medicinal substances in nature's greatest drug manufactory, the animal body.

There is no shortage of source material, for there are hundreds of thousands of compounds to choose from. Yet, strange to say, relatively few have met the rigid requirements set up by the medicinal worker.

There are three volumes to which we turn for information on this. The U.S. Pharmacopoeia and the National Formulary are recognized as official under the federal food and drug laws. New and Non-Official Remedies, N.N.R., is published annually by the Council of Pharmacy and Chemistry of the American Medical Association (The Council is composed of few chemists and no pharmacists) which sets up standards for substances which have no official recognition.

In these three books we will find less than a thousand titles, even if every pollen is counted. A year ago I had occasion to make a tally and here is what I found in part: There were 104 inorganic compounds; 212 from botanical sources; 45 from animal or glandular sources; 200 compounds of known organic structure, of which 80 per cent are of strictly synthetic origin. I shall restrict myself to certain aspects of the organic compounds.

At first glance the number appears unusually small, especially when we take into consideration the larger number of compounds listed in *Beilstein* or other lexicons. Also we have caught responsible chemists, who ought to know better, boast that the chemist has synthesized thousands of drugs.

But from another angle I think we

may take heart, for we really have made remarkable progress. For example, U.S.P.V., out in 1870, listed only three organic drugs not of natural origin; they were chloral, chloroform and iodoform. Today we can count in U.S.P. XII, N.F. VI, and N.N.R. about 160 drugs of synthetic origin. Furthermore, some of the substances which are produced in nature can be prepared in the pure state more economically by synthesis. Thus vitamins B¹, B², or G, and B² (thiamine, riboflavin and pyridoxine) are synthesized on a commercial scale.

However, numbers alone do not give a complete picture. There is a qualitative point of view which also merits consideration. For among the drugs of synthetic origin are found many indispensable types, possessing physiological properties not duplicated by natural products.

One need only mention, for example, anesthesia. We all know what a boon anesthesia has been to the surgeon, and where would the surgeon find an anesthetic if he could not have ether, cyclopropane, pentothal and similar substances?

And after the operation, what would the surgeon do if he could not keep the wound free from infection? What would the modern world be without sodium acetylsalicylate? And what about a dozen or so barbiturates? The sulfa drug? Benzedrine? And how about atabrine and plasmoquin, now that the Japs have taken

our sources of quinine? Then there is a variety of arsenicals to combat the spirochetes of syphilis and sleeping sickness. I should say we have just cause to take pride in our achievements thus far. We have come a long way in seventy years, and in the next seventy years we ought to show an increase four times as great.

We may be pardoned any pleasure we take in these developments, but there is also something disturbing when we stop to view the entire picture. Sometimes we seem to have been slow in catching on. Nicotinic acid, for instance, was known as far back as 1869, but it was not until 1937, nearly seventy years afterward, that its value in pellagra was discovered. How many pellagrin might have been relieved by a remedy available but undiscovered during all these decades? Again sulfanilamide, first prepared in 1908, had to be rediscovered as a drug twenty-seven years later. How many fatalities of septicemia or so-called bloodpoisoning might have been prevented had we known of its almost miraculous therapeutic properties?

Are there, perhaps, other undiscovered medicinal gems in our storehouse of known chemicals, waiting to be studied, but meanwhile the disease for which they might be specific, goes on destroying and incapacitating as it pleases? Do we have in our hands, so to say, a valuable drug whose medicinal virtues we fail to recognize?

What the Chemist Should Know About Patents

Harold A. Swanson

Manager of Patent Department, National Oil Products Co., Harrison, N. J.

Letters addressed by the sovereign, to the public at large, setting forth the grant to the patentee of some dignity, office, monopoly franchise or other privilege. Such letters are not sealed but are left open; hence the term "patent".

According to history, letters patent have been granted for various privileges ranging from the use of public lands to protecting inventions, the latter type being of most importance today.

The granting of a patent for an invention is considered, in a broad sense, to convey unto the patentee a monopoly on the subject matter embraced within the claims of his patent. To the layman the term "monopoly" suggests some evil practice which is contrary to the rights of the public and it is, therefore, unfortunate that this term is associated with the definition of the rights conveyed to an inventor upon the granting of a patent.

Notwithstanding this factor, a clear distinction can be drawn between the commonly known and unlawful types of monopolistic practices and the monopoly involved in a patent grant. In the unlawful type of monopoly, the manufacture and/or sale of a well-known and unpatented commodity is controlled. In the case of a patent, the owner thereof controls the manufacture and/or sale of a new commodity which was never known before. The evolution of our patent system bears out the foregoing distinction between the illegal and legal forms of monopoly.

In England during the period from the Middle Ages to the early part of the seventeenth century the so-called illegal forms of monopoly flourished. In order to produce revenue, the Crown granted monopolies to a selected few whereby these privicharacters conducted their trade without competition. While monopolies were contrary to the common law in England at that time and while the courts declared in several instances that these monopolies were void, the Crown persisted in granting them. These continuous violations of the common law led to the enactment by Parliament of the "Statute of Monopolies" in 1623.

The Statute of Monopolies did not create any new rights on the part of the people or the Crown but merely enacted the common law relevant to monopolies into statute law. It is significant to note that in the enactment of the Statute of Monopolies, Parliament made a specific reservation for the granting of patents to inventors, conferring upon them an exclusive right for a period of fourteen years.

It is clear then that the distinction between an illegal monopoly and the monopoly involved in the grant of a patent to an inventor was well understood back in the seventeenth century. The same distinction prevails today notwithstanding the attempt on the part of certain forces to create confusion with respect thereto.

The principle of extending protection to inventors was recognized by the early settlers of our country as several of the colonies granted patents for inventions. Our present patent system was born with the framing of the Constitution, Article I, Section 8, of which provides:

"The Congress shall have power **** To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries; ****"

Accordingly, Congress in 1790 passed the first patent act whereby

the grant of patents by Federal Government was inaugurated. While Congress has amended the original patent act from time to time, the principal portion thereof is Section 4886 of the Revised Statutes of the United States which reads as follows:

"Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, or who has invented or discovered and asexually reproduced any distinct and new variety of plant, other than a tuberpropagated plant, not known or used by others in this country, before his invention or discovery thereof, and not patented or discribed in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than one year prior to his application, and not in public use or on sale in this country for more than one year prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor."

Inasmuch as the authority for the granting of patents rests solely in the Statutes the provisions thereof must be adhered to strictly. It is interesting to note that Section 4886 uses the

WHAT THE CHEMIST SHOULD KNOW ABOUT PATENTS

words "discovered" and "discovery" synonymously with "invented" and "invention". These words are not synonyms, as brought out by Webster's Dictionary which states:

"Discover differs from invent. We discover what before existed. We invent what did not before exist."

The Courts have constructed Section 4886 in a manner similar to that of Webster's definition by holding that a patent, to be valid, cannot be based on a pure discovery. In order to obtain a valid patent it is necessary to go beyond the stage of mere discovery by coupling the discovery with some means or medium to effect something or to accomplish a result which never existed before.

A classic example in which this rule was applied is found in the case of Cameron Septic Tank v. Saratoga, 159 Fed 453, which involved a patent directed to a bacteriological process wherein sewage was treated, in a vessel from which air was excluded, by anaerobic bacteria. The Court in upholding the validity of the patent stated:

"This certainly involved the use of one of the agencies of nature for a practical purpose.**** The process is one which puts a force of nature into a certain specified condition and then uses it in that condition for a practical purpose."

As clearly set forth in the Statutes,

an invention, to be patentable, must fall within one of the five specific categories or classifications provided, namely, (1) art, (2) machine, (3) manufacture (4) composition of matter and (5) asexually reproduced plant.

The first category art, embraces processes and methods directed to the production of a useful result. The Supreme Court of the United States in Cochrane v. Denver, 94 U.S. 780, amply defined this classification as follows:

"A process is a mode of treatment of certain materials to produce a given result. It is an act or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable, whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances and in a certain order, but the tools to be used in doing this may be of secondary consequence."

The second category is directed to machines of various types including chemical apparatus and equipment. This classification offers no particular problem in the way of defining its scope.

The third classification embraces manufactures, more frequently referred to as articles of manufacture. This classification is somewhat all inclusive covering everything produced by man, with the exception of machines and compositions of matter.

The fourth category comprises compositions of matter which are composed of two or more constituents or substances. An excellent definition of this category is found in Sharpless Co. v. Crawford Farms, 287 Fed 655, wherein the Court stated:

"A patentable composition of matter may well result or be found by the intermixture of two or more ingredients, which develop a different or additional property or properties which the several ingredients individually do not possess in common."

The fifth and last category involves the asexual reproduction of plants, other than tuber-propagated plants. This class is highly specialized and will not, therefore, be treated here.

Now in order to obtain a patent, the subject matter must fall within one of the aforementioned categories. Secondly, an invention or a patentable discovery must have been made. The question of whether invention is present or not is a rather arbitrary proposition. While Congress prescribed that invention is a necessary condition to the granting of a patent, it did not prescribe any formula by which this question could be determined. It is well established that the question of invention is a question of fact and not a question of law. While invention resolves itself to a matter of fact, we do apply various rules of law useful in determining the question of invention. With respect to the question of invention of invention, the Court in Radiator Specialty Co. v. Buhot, 39 F. (2nd) 373, stated:

"The question of invention being a question of fact, to be determined, however, by rules of law. we are constrained to hold the patent valid on a fact finding of invention in its subject matter. In announcing this judgment we may observe that though invention, it is not a great one. Yet, though not the work of genius, it still may be invention. Invention is not always the offspring of genius; more frequently it is the product of plain hard work; not infrequently it arises from accident or carelessness: occasionally it is a happy thought of an ordinary mind; and there have been instances where it is the result of sheer stupidity. It is with the inventive concept, the thing achieved, not the manner of its achievement or the quality of the mind which gave it birth.

that the patent law concerns it-self."

One of the basic rules employed by the Patent Office and the Courts is:

"To constitute invention, the matter at hand must be beyond that which the ordinary man skilled in the art would have arrived at under the same circumstances."

Another definition of the test of invention is given in the case of Kirsch Mfg. Co. v. Gould Mersereau Co. 6 F. (2nd) 793, wherein Judge Learned Hand stated:

"The question (of invention) is one of evidence in each case, and the issue necessarily depends upon a shifting standard, just as in cases of due care. Objective tests may be of value vaguely to give us a sense of direction, but the final destination can be only loosely indicated. An invention is a new display of ingenuity beyond the compass of the routineer and in the end that is all that can be said about it. Courts cannot avoid the duty of divining as best they can what the day to day capacity of the ordinary artisan will produce. This they attempt by looking at the history of the art, the occasion for the invention, its success, its independent repetition at about the same time, and the state of the underlying art, which was a condition upon its appearance at all. Yet, when all is said, there will remain cases when we can only fall back upon such good sense as we may have, and in these we cannot help exposing the inventor to the hazard inherent in hypostatizing such modifications in the existing arts as are within the limited imagination of the iourneyman. There comes a point when the question must be resolved by a subjective opinion as to what seems an easy step and what does not. We must try to correct our standard by such objective references as we can, but in the end the judgment will appear, and no doubt be, to a large extent personal, and in that sense arbitrary."

Judge Learned Hand who wrote the opinion in the cited Kirsch case is recognized by the Patent Bar to be one of the most competent of all the Federal judges in the matter of patent law. It is significant to note that Judge Hand holds that the judgment of invention is to a large extent personal and, in that sense, arbitrary.

This holding clearly reveals the difficulty involved in determining whether or not invention is present in any given case. This factor renders it highly important to consider the evidence, circumstantial or otherwise, surrounding any particular case.

Every patentee and every applicant for a patent is presumed, according to law, to know the prior art. Not only is he presumed to know the art published before his invention, but he is presumed to know and at least charged with the knowledge contained in applications for patents which were filed prior to his invention, even though patents on these applications were not granted until after his invention was made or until after an application for his invention was filed in the Patent Office.

Whether he actually knows the prior art or not, he is charged with the complete knowledge thereof, and it is from this point that we must start in determining the question of invention.

While novelty is a prerequisite to patentability this in and of itself does not constitute invention within the terms of the patent law. Invention is something beyond what would be expected of the average journeyman or the man skilled in the art who might be faced with the particular problem at hand.

The next question is: What standard shall be set in any given case? History reveals that the standard of invention has been raised with the passage of time, the greatest change having taken place in the last ten years.

This trend is no doubt sound to a certain degree, that is, commensurate with the higher degree of education of chemists and engineers and of the greater industrial development of modern times. The practical answer is that it probably takes a greater degree of ingenuity to make an invention today than it did ten, twenty, or fifty years ago.

We have several basic negative rules we can follow in determining invention. For example, there is no invention involved in changing the size, form or degree of purity in any given article of manufacture. While this rule applies generally there may be exceptions, a glaring example of which is found in the famous aspirin case of Kuehmsted v. Farbenfabriken, 179 Fed 701.

In this case the Hoffman patent directed to acetylsalicylic acid (aspirin) was held to be valid even though it differed from the prior art only in that the acid was purified by being recrystallized from dry chloroform. Of course the reason for holding the Hoffman patent valid rested in the therapeutic properties proved to be present in Hoffman's products, and curiously lacking in the product of the prior art which was accepted to be the impure product.

There are other negative rules such as: Aggregation of parts involves no invention. The best example of this rule is the case of Reckendorfer v. Faber, 92 U.S. 347, wherein the Supreme Court held the patent on a lead pencil having an eraser affixed to one end thereof to be invalid, on the ground that the pencil part of the implement performed its function sep-

arate and apart from that of the eraser; hence there was no cooperation between the lead and the eraser elements to provide a new combination. To have a valid combination the elements thereof must cooperate with one another to give a new result.

Still another negative rule is that the omission of an ingredient from a composition of matter along with an omission of its function does not constitute invention. By the same token, however, the omission of an ingredient from a known composition of matter without omission of its prescribed function does amount to invention.

Another negative rule is that there is no invention in using either an old process, article of manufacture, machine or composition of matter for a new and analogous purpose. On the contrary, however, if the use or purpose is non-analogous to that of the prior art, evidence of invention is present.

While there are many other negative rules of the foregoing type, there are likewise many positive rules supporting patentability in that if there has been a long needed want for the solution of a problem, a satisfactory solution thereof is clear evidence of invention. Commercial success is considered evidence of invention although in and of itself it will not support patentability. This rule comes into play when the question of invention is somewhat doubtful.

Another one of the most widely applied rules is if the results are new and unobvious to those skilled in the art then invention is considered to be present. A similar rule peculiar to chemical cases is if the results are not predictable, then invention has been achieved. Increase in efficiency or reduction in costs also constitutes evidence of invention.

The preparation of an application for a patent constitutes the most important phase of obtaining and maintaining a patent. In the first place, the value of a patent, aside from the subject matter thereof, is directly dependent upon the skill with which the application is prepared and prosecuted.

It is the duty of any patent practitioner first to familiarize himself with the prior art in any given case by fully discussing the matter with the inventor and by having an independent search conducted to develop the relevant patents and literature. In the event the disclosure afforded by the inventor is not sufficiently comprehensive, the patent attorney should suggest further research or experimentation, at the same time indicating what his own opinion may be as to what equivalents or alternatives may be used to effect the purposes of the invention.

Care should be taken to incorporate into the specification of the application sufficient specific examples of the process of producing a given product or composition of matter as well as several examples of the various compounds and reagents which may be used in such process.

Some attorneys choose to rely on a generic disclosure rather than giving specific details or examples and, accordingly, run into difficulty with rejections based upon insufficient disclosure.

In drafting an application the specification is usually drawn first, after which the claims are formulated. In some cases the reverse procedure is advantageous but for the most part revision of both the specification and the claims after preparation of a rough draft of each is necessary.

While the specification forms an important part of a patent or application therefore, the claims are, in effect, the patent. They serve to measure the scope of the invention in any case, and anything falling outside of the claims is not covered or protected. It is well to have the broad statement of the invention, appearing in the forepart of the specification, comparable in scope to the broadest claim filed.

If the broadest claim originally filed is narrowed during prosecution of the application, the broad statement of the invention should be amended to conform in scope with the broadest claim ultimately allowed.

In drafting a set of claims care should be taken to cover the invention in the broadest possible terms, in order to afford a degree of protection commensurate with the advance made. While broad claims are quite proper they must be definite in their terms so that their scope can be construed without recourse to the specification.

Claims must recite structure whether they are mechanical or chemical in nature, otherwise they will be considered indefinite and/or functional. In general, the first claim constitutes the broadest claim, each succeeding claim diminishing in scope.

While there is no rule to this effect, most attorneys draft claims in that order. Each claim in the application must patentably differ from each other claim in the case, as each claim, in effect, is a patent in and of itself. The number of claims granted in any case is of no particular significance, as six well drafted claims are of much greater value than sixty poorly drafted claims. As a matter of fact, the Patent Office looks with disfavor on a large number of claims, as a multiplicity of claims often confuses the issue. In such a case the Patent Office may reject all of the claims on the ground of undue multiplicity.

The value of any invention, from a patent standpoint, is directly dependent upon the type of claims which may be obtained. Product claims are, of course, the most valuable as they cover the actual commodity sold in the open market. Moreover, it is much easier to detect infringement of a product claim than it is in the case of a process claim.

As far as chemical compounds are concerned, there are essentially three types of claims which may be resorted to. Probably the most desirable form is where use is made of the structural formula of the compound. Generic claims may be drafted even though the structural formula is used, as letter references may be employed in the formula to designate various substituents.

The second type is where the product is claimed as a reaction product of two or more recited compounds. This form is advantageous where the actual structural formula of the end product is not definitely known.

The last and most undesirable type is where the product is claimed by the process of producing the same. This type is permissible only when either of the first two types cannot be employed. Along with any one of the aforementioned types of claims it is well in some instances to include as a part of the claims some of the outstanding physical and/or chemical properties of the product in question.

In the drafting of claims on a composition of matter essentially the same system as that set forth in connection with product claims is followed. In some instances it is well to recite the specific proportions and preferably a percentage range for each of the constitutents present. As far as process claims are concerned, they should include only the essential steps or the novel features of the process. This is particularly true where any one of the several known steps may be followed in finishing a given product such, for example, as recrystallizing, driving off a solvent, etc.

When the application is received in the Patent Office it is assigned to the Examiner in charge of the subject matter to which the application pertains. The Examiner in due course makes a search of the invention and prepares his report in the form of an official action wherein he registers any objections and rejections which he deems appropriate.

The attorney then responds to the official action, setting forth his arguments for overcoming the objections and rejections. This procedure is followed until such time as the issues involved are crystallized, in which event the claims are either allowed or finally rejected. If any claims are finally rejected, an appeal may be filed with the Board of Appeals in the Patent Office.

If the Board of Appeals sustains the Examiner and the applicant desires to go further, his case may be presented to either the Court of Customs and Patent Appeals or to the Federal District Court for the District of Columbia. No appeal lies from a decision of the Court of Customs and Patent Appeals whereas an appeal may be taken to the Circuit Court of Appeals for the District of Columbia from the District Court.

In bringing a case before the Court of Customs and Patent Appeals it is in the nature of a direct appeal; that is, one goes before the Court on the Patent Office record without the privilege of introducing any new or further evidence. An action brought into the District Court, on the other hand, involves a trial de novo; that is, the inventor's whole case, including expert testimony and any evidence whether new or old as far as the Patent Office record is concerned, is presented to the Court.

When the Patent Office agrees to allow an application, the Examiner, before passing the case to issue, makes an interference search to ascertain whether or not an application of any other party contains claims to the same or substantially the same subject matter.

In the event that such a second application does exist, the Examiner sees to it that one or more identical claims are incorporated into both applications, after which he declares an interference, which is a proceeding conducted to determine who first made the invention.

After the interference is declared, the applications are forwarded to the Interference Division and the Examiner of Interferences sets a date as to when each of the parties is to file a preliminary statement, which is a document setting forth the dates as to when the invention was conceived, when it was reduced to practice, when the first written description of the invention was made, when the invention was first disclosed to others and when active diligence in reducing the invention to practice commenced.

The preliminary statements are kept sealed until the so-called motion period has expired. During the motion period either one or both parties may file motions of various types for adding to the issue additional claims. which are called counts: for dissolving the interference on any one of several grounds; for shifting the burden of proof: and for other reasons. If the interference is not dissolved, times are set for taking testimony, the applicant having the later filing date—and called the junior party being the first to take testimony. The junior party has the privilege of taking rebuttal testimony after the senior party has taken his testimony.

The taking of testimony is a very important part of an interference proceeding, and it is one instance where good notes and records of an applicant pay dividends. It is incumbent upon any research man to keep complete and accurate notes of his experimental work.

Each research man should keep his own notebook which should, in effect, constitute a log of his activities. The value of such a notebook, as far as evidence is concerned, is materially

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strengthened if all the recordings therein are made in ink with each page dated and witnessed by another person. If an error is made in recording data or a date, an attempt should not be made to correct it by erasures; the matter should be crossed out and rewritten on the next line.

Many research men balk at the idea of keeping their notebooks according to the foregoing system, but after one experience in an interference proceeding they well appreciate the value of the extra effort involved. There are many cases where the actual prior inventor has lost due to the fact that his records were inadequate and he could not, therefore, prove his case.

It might be well to touch upon two points of particular current interest, namely, "use patents" and the famous "flash of genius" case.

The so-called use patent is considered by the layman to be in the nature of a special type of patent which was at one time permissible but which has recently been abolished. The law with respect to use patents has not been materially changed in the last few years. Broadly speaking, the discovery of a new use for an old product or composition of matter does not amount to invention unless new and unobvious or unpredictable results flow from such use. Moreover, such use must be of such a nature as to fall within one of the categories set forth in the patent statutes, namely, an art,

manufacture, machine, or composition of matter.

If a chemical compound or composition of matter is old per se, it cannot be repatented, as such, for a new use. The original inventor of a chemical compound or composition of matter may use the same for any purpose for which it is suitable, whether he was or was not originally aware of such use. Many great and valuable discoveries concerning uses for known compounds have been made for which no patent protection could be obtained.

One of the most famous cases on this point is that Morton v. Infirmary which was decided back in 1862. Morton had obtained a patent on his discovery to the effect that the inhalation of ether by a person produced insensibility to pain. The Court held the patent to be invalid on the ground that it did not fall within the purview of any of the classes of invention enumerated in the patent statutes.

A patent on a new use of an old compound may be obtained, if such use can be claimed in a manner authorized by the patent statutes. A patent may be obtained if the old compound is used to produce a new composition of matter, provided the new composition is claimed; or, if the old product is used in a process, or if the compound itself is converted into a new form, as exemplified by the aforementioned aspirin case.

The famous case of Cuno Engineering v. Automatic Device Corp. wherein the Supreme Court brought forth the "flash of genius" principle at first created a great deal of concern among many people. Much has been written on this subject, some taking issue with the Court's decision and others taking the view that no new principle was enunciated. Without delving too deeply into the subject, it is significant to note that the Supreme Court has not reiterated this principle in any of their decisions rendered subsequent to the Cuno case.

In fact, Mr. Justice Frankfurter who wrote a dissenting opinion in the case of Marconi Wireless Telegraph Co. of America v. United States, decided last June, stated:

"Certainly the great eminence of Clerk Maxwell and Sir Oliver Lodge and Nikola Tesla in the field in which Marconi was working is not questioned. They were, I suppose, men of genius. The fact is that they did not have the "flash" (a current term in patent opinions happily not used in this decision) that begot the idea in Marconi which he gave to the world through the invention embodying the idea."

In the case of Goodyear Tire and Rubber Co. v. Ray-O-Vac, decided last February, the Supreme Court finally held a patent on a leakproof dry cell battery to be valid. The patentee was not credited with displaying a "flash of genius" in achieving the invention in question.

In several instances the Federal Courts have alluded to the Cuno case in a rather passive way; for example, in the case of Trabon Engineering Corp. v. Dirkes, 136 F. (2nd) 24, Judge Simons of the Circuit Court of Appeals for the Sixth Circuit stated last June:

"We are likewise aware of the deep concern felt by patent lawvers and research engineers, not only over higher standards of invention, but over what in some quarters has been thought to be an entirely new concept of invention deriving from Cuno Corp. v. Automatic Devices Corp., 314 U.S. 84, 91, 62 S.Ct. 37, 41, 86 L.Ed. 58, where it was said that a new device "however useful it may be, must reveal the flash of creative genius, not merely the skill of the calling." We do not interpret the observation as indicating anything more significant than that the quality of invention is "something more" than expected mechanical skill. Nor do we read the phrase as another conscious effort to define the indefinable."

Further on in the foregoing decision reference is made to Edison's definition of genius which was "2 per cent inspiration and 98 per cent perspiration".

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From an analysis of the most recent trend of the Supreme Court as well as the Federal Courts in general, it is apparent that the "flash of genius" principle did not, in effect, set a new standard or prescribe a new formula for determining the question of invention.

In conclusion it might be pointed out that patents constitute the most important part of our scientific literature and this is particularly true as far as chemical technology is concerned. A patent includes within its disclosure operative means of producing the end result.

In this aspect patents are far more

valuable from an informative viewpoint than the literature published in scientific journals and other publications. Moreover, many patents issue concerning subject matter which is not made available through other forms of scientific literature.

From this aspect it is quite clear then that our present patent system is functioning in the manner for which it was originally designed, namely, to promote the progress of science and the useful arts by securing for limited times to inventors the exclusive right to their respective discoveries in exchange for publication of their discoveries.







Hayes with Publicker **Commercial Alcohol**

C. Ellwood Hayes, Jr., M.A.I.C., formely senior chemist with Charles Lennig and Company, has accepted a supervisory position with the Publicker Commercial Alcohol Company, Philadelphia, Penna.

New Technological Institute Founded

St. Louis University was selected to receive \$1,350,000 under the will of Henry E. Sever, Chicago, publisher, The bequest is to be used for the founding of a technological institute to bear his name. It will be headed by Dr. James B. Macelwane, wellknown in the geophysical field, who is now teaching at that University.

Auer Opens Consulting Office

Laszlo Auer, F.A.I.C., formerly director of coating materials for Ridbo Laboratories, Nutley, New Jersey, has started his own consulting practice at 88 Harding Drive, South Orange, New Jersey.

Monsanto's Net Earnings Decrease

Net sales of Monsanto Chemical Company for 1943 increased approximately eighteen per cent over the previous year, but net earnings of \$3.56 per common share were less than those of \$3.75 for the previous year, Edgar M. Queeny, chairman of the board, disclosed in his annual report to stockholders. Net profit for 1942 in turn was less than that for 1941.

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March Meeting

A MEETING of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held on Friday, March 24, 1944, at 6:30 p.m. at The Chemists' Club, 52 East 41st Street, New York, N. Y., with vice-president Donald Price presiding.

The following officers and councilors were present: Messrs. S. R. Brinkley, H. L. Fisher, F. A. Hessel, R. E. Kirk, E. L. Luaces, Donald Price, F. D. Snell, A. Lloyd Taylor and M. Toch. Mr. John R. Fisher,

Jr., Secretary of the Miami Valley Chapter, Mr. T. S. McCarthy and Miss V. F. Kimball were present.

The minutes of the previous meeting as mailed out to the councilors were approved. The treasurer's report was read and accepted.

Dr. Toch, chairman of the Jury of Medal Award, reported that a meeting of the Jury was held on March fifth, and that Dr. Willard H. Dow was unanimously chosen as the medalist for 1944.

Several definitions of the word

"chemist" were read as suggested by councilors, and the secretary was requested to hold these and await definitions from other councilors.

Upon motion made and seconded, the Council expressed, the sincere hope that Mr. Neiman would soon recover from his illness and requested that a letter be written to Mr. Neiman which would be signed by the Councilors present.

Upon motion made and seconded the constitution and by-laws of the Pittsburgh Chapter were approved, subject to the approval of Mr. Neiman.

R. H. Carr, F.A.I.C., was elected to Life membership.

Edwin Dowzard, F.A.I.C., was elected to Life membership.

Upon motion made and seconded, the following new members were elected:

Fellows

Adams, Robert S.

(1944), Organic Chemist, Halliburton Oil Well Cementing Company, Duncan, Oklahoma.

Ashton, Fred W.

(1944), Petrographer and Assistant Manager, Universal Atlas Cement Company, Buffington, Ind.

Atkinson, Robert G.

(1944), Technical Advisor, Shamrock Oil and Gas Corporation, P.O. Box 631, Amarillo, Texas.

Blume, Paul W.

(1944), Research Chemical Engineer, Niagara Alkali Company, Niagara Falls, N. Y.

Brady, Lynn J.

(1944), Industrial Fellow, Mellon Institute, 4400 Fifth Avenue, Pittsburgh, Penna.

Brown, Raymond G.

(1944), Executive, Comstock and Wescott, Inc., Box 835, Niagara Falls, N. Y.

Burkhart, C. W.

(1944), Research Chemist, Pennsylvania Salt Manufacturing Company, Philadelphia, Penna.

Clark, Lee H.

(1944), Plant Manager and Vice President in charge of Production, Sharples Chemicals, Inc., Wyandotte, Michigan.

Cline, Edwin L.

(1944), Industrial Fellow, Mellon Institute, Pittsburgh 13, Penna.

Hazel, Wallace M.

(1944), Chief Chemist, Norton Company, Chippawa, Ontario, Canada.

Huber, Francis C.

(1944), Research Chemist, Group Leader, The Barrett Division, Allied Chemical and Dye Corporation, Bridesburg Station, Philadelphia, Penna.

Kammermeyer, Karl

(1944), Director of Chemical and Chemical Engineering Research, Publicker Commercial Alcohol Corporation, Philadelphia, Penna.

King, William H.

(1944), Chief, Chemical-Toxicological Section, Louisiana State Health Department, New Orleans, Louisiana.

Maguire, James F.

(1944), Manager of Industrial Development, Reichhold Chemicals, Inc., Elizabeth, N. J.

COUNCIL

Morgan, Oliver M.

(1944), Research Chemist, National Aniline Division, Allied Chemical and Dye Corporation, Buffalo 5, New York.

Rees, Orin W.

(1944), Chemist and Head Analytical Division, Illinois State Geological Survey, Urbana, Illinois.

Robinson, Clark S.

(1944), Lt. Col. Ordnance Department, U. S. Army, 333 N. Michigan Avenue, Chicago, Illinois.

Schlissel, Morris

(1944), Chief Chemist and Plant Manager, Metropolitan Refining Co., Long Island City, New York.

Seniff, Russel W.

(1944), Chemical Engineer, The Alton Railroad, Bloomington, Illinois.

Smith, G. Frederick

(1944), Professor of Chemistry, University of Illinois, 867 McKinley Avenue, Columbus, Ohio.

Towle, Louis W.

(1944), Research Chemist, Apache Powder Company, Benson, Arizona.

Van Loo, Maurice

(1944), Assistant Director, Sherwin-Williams Company, Chicago 28, Illinois.

For Members

Levin, Ernest M.

(M.1944), Analytical Chemist, National Bureau of Standards, Old Mint Building, San Francisco, California.

Levitt, Leonard S.

(M.1944), Technical Representative, Glyco Products Company, Philadelphia 2, Pennsylvania.

For Associate

Sirota, Julius

(A.1944), Research Assistant, S.A.M. Laboratories, Columbia University, New York City.

There being no further business, adjournment was taken.

Applications for Membership

For Fellow

Bussow, Carl

Vice-president and Chief Chemist, A. W. Dow, Inc., 801 Second Avenue, New York, 17, New York.

Conte, Ernest

Chief Chemist, Mallinckrodt Chemical Works, 223 Westside Avenue, Jersey City, New Jersey.

Ehrmann, Rolfe H.

Research Chmist, Polak's Frutal Works, 36-14 35th Street, Long Island City, New York.

Groff, Charles H.

Ass't. Technical Director, The Watson Standard Company, 225 Galveston Avenue, Pittsburgh, Pennsylvania.

Kane, Jasper H.

Director of Biochemical Production and Research, Charles Pfizer and Company, Inc., 11 Bartlett Street, Brooklyn, New York.

Knauss, C. A.

Vice-president in Charge of Eastern Technical Service and Development, Reichhold Chemicals, Inc., 726 Rockefeller Street, Elizabeth, New Jersey.

Lundin, Harry G.

Research Chemist and Analyst, Pond's Extract Company, Clinton, Connecticut.

Mann, Charles A.

Chief & Professor of Chemical Engineering, University of Minnesota, Minneapolis, Minn.

Orlando, Anthony J.

Owner-Director, Orlando Research Laboratories, 369 - 9th Street, Brooklyn, New York.

Shuger, Leroy W.

Technical Director, Baltimore Paint & Color Works, 150 South Calverton Road, Baltimore-23, Maryland.

Stephan, Elmer F.

Research Engineer, Battelle Memorial Institute, 505 King Avenue, Columbus 1, Ohio.

Wendt, Arthur S.

Chief Chemist, Martin Laboratories, 251 East 139th Street, Bronx, New York.

Wilder, Richard S.

Head of Organic Division, Research Department, Publicker Commercial Alcohol Company, Swanson and Mifflin Streets, Philadelphia, Pennsylvania.

Woods, J. Edmund

Assistant Professor of Physics, Queens College, Flushing, New York, New York.

For Member

Danforth, Warren B.

Supervisor, Merck & Company, Elkton, Virginia.

Heiberger, Philip

Research Chemist, Project Director, Ralph L. Evans Associates, 250 East 43rd Street, New York, New York.

Hofmann, Corris M.

Research Chemist, Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J.

Odell, Loren B.

Research Chemist, Eagle-Picher Lead Company, P. O. Box 290, Joplin, Missouri.

For Associate

Fernandez-Morrel, Roberto I.

Box 448, Catholic University Washington 17, D. C.

Smith, George Pedro

Student, Cobb Chemical Laboratory, University of Virginia, University, Virginia.

Tutwiler, Frank B.

Student and Student Assistant, Department of Chemistry, The George Washington University, Washington, D. C.

To Be Raised from Member to Fellow

Davidson, Emil

Director of Research, Clay-Adams Company, Inc., 44 East 23rd Street, New York 10, New York.

To Be Raised from Associate to Fellow

Luckens, Mark M.

Lt. SnC, Station Hospital, Camp Shelby, Mississippi.

CHAPTERS

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Secretary-treasurer, Edward M. Hanzely 3816 Kimble Road Baltimore 18, Maryland

Council Representative, Maurice Siegel News Reporter to THE CHEMIST, Ralph Lamenzo

March seventeenth. The speaker was this issue of THE CHEMIST.

MEETING of the Chapter was Dr. Walter H. Hartung, whose paper held at Loyola College on on Medicinal Chemistry appears in

Chicago

Chairman, Hilton I. Jones

Vice-chairman, H. R. Kraybill

Secretary-treasurer, Charles L. Thomas Universal Oil Products Company Riverside, Illinois

Council Representative, Howard Adler

THE Chicago Chapter held an open meeting on March third at Huyler's Restaurant. About 110 attended the dinner and over 200 attended the program.

The minutes of the last meeting and the last Chapter Council were read.

Dr. Egloff gave a report on the

National Council action on collective bargaining.

Dr. Herman A. Wagner gave a talk on: "Unionism vs. Professionalism in the Scientific and Technological Fields." His talk is printed in this issue of THE CHEMIST.

Los Angeles

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Secretary-treasurer, Imo Baughman Simpson 640 N. Kenmore Avenue Los Angeles, California

Louisiana

Chairman: D. F. J. Lynch

Vice Chairman: C. S. Williamson, Jr.

Secretary-treasurer, J. David Reid

Southern Regional Research Laboratory 2100 Robert E. Lee Boulevard New Orleans 19, Louisiana

Council Representative, Harold A. Levey

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Secretary-treasurer, John R. Fisher, Jr. Chemical Developments Corporation 314 W. 1st Street, Dayton 2, Ohio

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Secretary-treasurer, Lloyd W. Davis
E. F. Drew & Company
416 Division Street, Boonton, New Jersey
Council Representative, A. Lloyd Taylor

A MEETING was held March 17th at Building Trades Employers' Association club rooms at 2 Park Avenue, New York, N. Y. Speakers were Harold A. Swanson, manager of the Patent Department of National Oil Products Company, and Ralph L. Ericsson. Mr. Swanson's talk on "Patents and the Chemist" is published in this issue of The Chemist.

Mr. Ericsson, assistant manager of the Technical Service Division of Commercial solvents Corporation, spoke on "The Nitroparaffins—Their Production and Use," and illustrated his talk with slides. He covered the various operations in the nitroparaffin plant, the chemical reactions of these compounds and their derivatives, and their use as solvents and as raw materials for chemical synthesis. Mr. Ericsson stated that marketing technical service has become a new science, in which new products are selected to meet the customers' needs, to anticipate the customers' needs, and to insure performance. New products must also be developed to improve the existing products.

Niagara

Chairman, Maurice C. Taylor

Vice-chairman, Lawrence H. Flett

Secretary-treasurer, M. R. Bhagwat Mathieson Alkali Works, Inc. Niagara Falls, New York

Council Representative, Arthur W. Burwell

Alternate, Lothar A. Sontag

Reporter to THE CHEMIST, Frederick Koethen

Pennsylvania

Chairman, Glenn E. Ullyot

Secretary-treasurer, Kenneth E. Shull 23 Bala Avenue Bala Cynwyd, Pennsylvania

Council Representative, John M. McIlvain

AMEETING of the Pennsylvania Chapter was held on Tuesday, February 29, 1944 at Temple University's Mitten Hall. An informal dinner preceded the regular business meeting.

The speaker of the evening was Dr. Raymond E. Kirk, Head of the Department of Chemistry of Polytechnic Institute of Brooklyn, and Chairman of the National Council's Committee on Unionization of Chemists. Dr. Kirk discussed "The Chemist and the Union".

Although the subject of unionization and collective bargaining has been freely discussed by the National Council, no complete plan of action has, as yet, been formulated. This is largely due to the fact that the Council does not wish to commit the Institute to any plan without first receiving and digesting the views of the Institute members.

The subject of unionization presents many problems: Some chemists are not satisfied with their employer-employee relations, with the result that they are more or less receptive to attacks from the various groups of organized labor, and have affiliated themselves with such groups.

On the other hand, some chemists are under pressure to affiliate with a heterogeneous bargaining group which is against their desire but almost necessary, if they are to avoid becoming a forgotten minority. It is believed by many chemists that the now famous Shell Case, in which the decision was rendered that profesional employees cannot be forced against their will to join a heterogeneous bargaining unit, settles the matter for all chemists. Such is not the case. For example, the decision does not prevent a homogeneous group of chemists from affiliating itself by majority vote with a labor union and entering into negotiations with the employer.

The problem is somewhat complicated as far as the INSTITUTE is concerned since many of its members might well be classed as management.

There appear to be three possible courses of action:

(1) We can follow the example of the American Society of Civil Engineers, who have already adopted a plan whereby each local section is permitted to set up a separate group of non-management engineers, to serve as a bargaining agency. Dues are nominal for members and somewhat higher for non-members.

(2) We can follow the example of the American Chemical Society who have taken exactly the opposite attitude. The A.C.S. will publish all available information on the subject, give legal advice, etc. but will not set up a collective bargaining agency.

(3) We can adopt some kind of middle course. Such a course may involve, among other things, a campaign of education to try to improve relations between employer-employee.

The "Town Meeting" which followed Dr. Kirk's interesting talk provoked much discussion among those present.

Washington

President, L. F. Rader, Jr.

Vice-president, L. R. Heiss

Treasurer, T. H. Tremearne

Secretary, Ernest J. Umberger 207 Albany Avenue, Takoma Park, Maryland

News Reporter to THE CHEMIST, S. W. Griffin

Council Representative, T. H. Tremearne

THE Washington, D.C. Chapter met March fourth at the Wardman Park Hotel. President Rader reviewed the recommendations comprising the report to the National Council by the Committee on Unionization, Dr. R. E. Kirk, chairman. Members were asked to give thought to this important question.

The speaker of the evening was Mr. H. C. Freimuth, of the chemical and physical laboratories of the Federal Bureau of Investigation. Mr. Freimuth spoke on "The Part that

Chemistry Plays in Crime Detection". The laboratory includes chemical, physical, spectrographic and cryptographic sections and has a personnel of more than three-hundred. It is a service organization which not only conducts independent investigations, but examines and handles evidence for other governmental agencies and cooperates generally with Police Departments throughout the country. Its well-known classes in crime solution are highly regarded and well-attended by police officials from all sections of the United States.

The methods of study which are pursued are many and varied. Bloodstains are examined to ascertain that they are of human origin and to classify them as to group. Analyses are made for organic and inorganic poisons both within and without body organs. Mr. Freimuth stressed the importance of prompt action in the chemical examination of body tissues following deaths from suspected poisoning. Embalming fluids contain active chemical agents, especially formaldehyde, which may react with, and make difficult the detection and determination of poisons administered. An example of this is the reaction of formaldehyde with cyanides.

In "hit and run" traffic crimes, the laboratory has materially assisted in fixing responsibility by various analytical means important among which are tests enabling the identification of the make and year of manufacture of a motor vehicle by special methods of paint examination. A fragment of paint or enamel, one-eighth inch in diameter, scraped off and found at the scene of the accident, is sufficient for the purpose.

Another function of the laboratory, especially important in war-time, is the assistance it renders in detecting the various forms of sabotage. One manifestation of sabotage is the attempt to frighten workers from places of employment by the poisoning or rumored poisoning of food or water supplies. Another phase of anti- sabotage activity consists of the tests which are made to disclose concealed imperfections in important castings or other vital machinery parts, made faulty either by intention or by reason of inexcusable carelessness. An example of this is in the so-called "slug welding" in which the metal edges at their surfaces appear to be normally welded, although there is no strength in the junction beneath.

Yet another problem of the chemical, physical, and spectrographic sections is the detection of specification violations in the attempted substitution of sub-standard for first-quality materials.

At the present time, considerable attention is being devoted to the detection of secret writing, an art which has materially advanced in finesse since the last world war. Under existing condition, the methods employed in detection must remain secret.

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New Books on General Chemistry

When Obermayer excavated the rock shelter at Castillo, near Santander, Spain, he uncovered twenty-five strata of prehistoric deposits, interspersed with stalagmitic layers, containing the characteristic artifacts of successive cultures. On the rocky floor of the cave, lay remnants of hearth fires, associated with the Acheulian Culture. Evidently before the days of Neanderthal Man, fire was known and used. Through the millenia that followed, fire was one of man's elements-water, earth, air and fire. With fire man made his first chemical transformations, and heat is his ultimate servant today.

Man's mental progress was proportional to his differentiation of the various earths, the waters, the airs, and the fires. With this speculation arose the idea of an ultimate atomicity to account for the various miscibilities of nature, and this speculation still goes on. Among philosophers, the chemist has been most assiduous in his studies of discontinuities in matter.

SECOND YEAR COLLEGE CHEMISTRY. W. H. Chapin and L. E. Steiner. John Wiley & Sons. 575 pp. 53/4" x 81/2". \$3.75.

In Second Year College Chemistry,

the chief concern is with atomicity as represented by molecules, atoms, and sub-atomic particles with their associated properties, solutions, colloids, and chemical equilibrium. The chemists' view of the electronic concept of atoms and elements is elaborately developed, with considerable matter on the transmutation of the elements. The interesting catalysis of hydrogen to helium by the carbon cycle would make a valuable addition. Ordinary chemistry as a descriptive acquaintance with substances is a prerequisite to the use of this book.

GENERAL CHEMISTRY. Horace G. Deming. John Wiley & Sons. 712 pp. 53/4" x 81/2". \$3.75.

This book is rangy and informative, covering the field from subatomic particles and molecular films to synthetic rubber and the blast furnace. Few words are wasted and it is concise and consistent, with salient facts tied together with interesting observations. Just as with drama, a comedy relief is used, so with his facts, the author uses side-lights of practical near-home applications to reinforce them. Whereas it is claimed to be an elementary survey, it is crowded with facts, arranged in a refreshingly unconventional manner.

GENERAL CHEMISTRY PROBLEMS. Wm. M. Spicer, Wm. S. Taylor, and Joe D. Clary. John Wiley & Sons. 120 pp. 53/4" x 81/2". \$1.25.

This is a fundamental book on the basic calculations of chemistry, well exemplified with detailed explanation of methods and the solution of problems.

MATERIAL AND ENERGY BALANCES.
O. A. Hougen and K. M. Watson.

John Wiley & Sons. 452 pp. 53/4"
x 81/2". \$4.50.

This book proceeds gradually through various practical physical and chemical processes, giving the scientific basis, and physical chemical computations of each. Included are the material and energy balances of a chamber acid plant, the blast furnace and petroleum cracking with recycling. The book is a reasonably-priced fund of information.

INDUSTRIAL CHEMISTRY. W. T. Read. John Wiley & Sons. 605 pp. 6" x 9". \$5.00.

This is a condensed survey of the field of applied chemistry, well elaborated within the limited space. It is an assemblage of facts and descriptions, adequate for a preliminary examination of the various chemical industries. The chapter on "Chemical Economics" would be improved by addition of an analysis of the "break even" point.

The above books are a part of the INSTITUTE'S library and may be inspected in the INSTITUTE office.

- JOHN A. STEFFENS, F.A.I.C.

PROTECTIVE AND DECORATIVE COATINGS. Volume IV. Special Studies. Prepared by a Staff of Specialists under the editorship of Joseph J. Mattiello, F.A.I.C. Vice President and Technical Director, Hilo Varnish Corporation, 41 pp., 6" x 9", \$5.00.

This is the fourth volume of the excellent and useful series which Dr. Mattiello has edited for the paint and varnish industry. Volume 4 has some timely chapters, and the most important is the chapter on emulsions. Inasmuch as synthetic emulsion paints will be an important factor after the war, this chapter prepares the paint technologist for the future.

Chapter 9 on microscopy in the paint and varnish industry is a trifle too complex for both the paint chemist and paint works manager. It must be borne in mind that all of the preceding excellent books on protective and decorative coatings were written for those interested in the technical end as well as the scientific aspect of paint and varnish, and therefore as an example it might have been wiser to explain what an Angstrom unit means. This is only one of the chapters which might have been made more elementary. Otherwise this

book and its predecessors form the only real basis for the technical and scientific instruction in the materials that are used for protection and decorative coatings.

- MAXIMILIAN TOCH, F.A.I.C.



The United States Testing Company, Inc., 1415 Park Avenue, Hoboken, N. J. has published a booklet, entitled "A New World," which describes the activities and services offered by the company. Copies may be obtained from the company on request, by mentioning The Chemist.



The Association of Consulting Chemists and Chemical Engineers, Inc., announces the publication of the eighth edition of its Classified Directory, which contains ninety-six pages of information concerning the membership and classification of the Association. Copies of this directory may be obtained on request to the association at 50 East 41st Street, New York 17, N. Y. by mentioning The Chemist.



"The Textile Industries of China and Japan" a pamphlet by Fessenden S. Blanchard, president of the Textile Research Institute, Inc., has just been published. Copies may be obtained from Textile Research Institute, Inc., 10 East 40th Street, New York 16, N. Y. at \$1.00 each.

Industrial Marketers Hold Fact Forum

A "Fact Forum" was held by the Industrial Marketers of New Jersey, at the Hotel Essex House, Newark, on March twenty-first. Dr. Frank Schoenfeld, director of technical operations and development of the Chemical Division of B. F. Goodrich Company, discussed "Synthetic Rubber." D. D. Knowles, manager of electronics engineering, Westinghouse Lamp Division, spoke on "Electronics," E. B. Wilbur, Atlantic Seaboard manager of the Aluminum Corporation of America talked on "Light Metals"; and George Scribner, president of the Society of the Plastics Industry, discussed plastics.



The American Council of Commercial Laboratories has just published its *Directory* describing the organizations and services of its members, which may be obtained on request to A. J. Nydick, executive secretary, 63 Wall Street, New York 5, N. Y., by mentioning The Chemist.



Cress-Mendelsohn

Simon Mendelsohn, F.A.I.C., consulting chemist of Cincinnati, and member of the Miami Valley Chapter A.I.C., was married March ninth, to Inez M. Cress, corporation personnel supervisor, also of Cincinnati.

Advisory Panel of Resin Manufacturers Meets

The second quarterly meeting of an industrial advisory panel of twenty-five manufacturers of synthetic elastomers, to cooperate with the new program of the National Research Council Committee on Quartermaster problems, was held at the Polytechnic Institute of Brooklyn on March ninth.

This research project, under the direction of Dr. Herman F. Mark of Polytechnic Institute, is designed to supplement the development work of the various branches of the Quartermaster Corps on synthetic films and resins used for military equipment and food packaging.

Among members of THE AMERI-CAN INSTITUTE OF CHEMISTS SERVing on the advisory panel are: H. F. Robertson, Carbide and Carbon Chemicals Corporation, New York, N. Y.; Dr. Norman A. Shepard, American Cyanamid Company, New York, N. Y.; W. S. Landis, Celanese Celluloid Corporation, New York, N. Y.; Dr. Ralph T. K. Cornwell, Sylvania Industrial Corporation, Fredericksburg, Virginia; Dr. W. F. Zimmerli, General Aniline and Film Corporation, New York, N. Y.; Dr. G. E. D'Alelio, Pro-phy-lac-tic Brush Company, Florence, Mass.; Dr. Willis A. Gibbons, U. S. Rubber Company, New York, N. Y.; Dr. Gordon Kline, Organic Plastics Sections, National Bureau of Standards, Washington, D. C.; Dr. John J. Grebe, The Dow Chemical Company, Midland, Michigan; and Ephraim Freedman, director, Bureau of Standards, R. H. Macy and Company, New York, N. Y.



National Calibration Service Purchased by Snell, Inc.

National Calibration Service, Brooklyn, has been purchased by Foster D. Snell, Inc., Brooklyn, N. Y., and will be operated by the Snell organization. The principal business of the Service is the verification of vertical compression and tensile testing machines, the former by means of the use of Whittemore-Petrenko rings, and the latter by standardized weights.



Ivor Griffith, F.A.I.C. president of the Philadelphia College of Pharmacy and Science and president of the American Pharmaceutical Association, spoke on "The Retail Pharmacists's Part in Public Health and the War Effort," before a meeting of the New York Branch of the Association, held at Fordham University College of Pharmacy, on April tenth.



Florence E. Wall, F.A.I.C., is now technical editor for the Central Research Laboratory, General Aniline and Film Corporation, Easton, Penn.

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Meeting Dates

- Apr. 27. Baltimore Chapter. THE
 AMERICAN INSTITUTE OF CHEMISTS. Loyola College, Baltimore,
 Maryland. Speaker: Dr. Donald
 Price, F.A.I.C., "The Chemistry
 of the Surface Active Agents."
- Apr. 29. Washington Chapter. The American Institute of Chemists. Election of Officers. Program to be announced.
- May . Miami Valley Chapter. The AMERICAN INSTITUTE OF CHEM-ISTS. University of Cincinnati. Cincinnati. Ohio.
- May 8. N. Y. Chapter, American Society for Metals. Speaker, A. A. Schwartz, "Induction Heating." 2 Park Avenue, New York, N. Y.
- May 12. New York Chapter. THE AMERICAN INSTITUTE OF CHEMISTS. Annual Business Meeting. 2 Park Avenue, 26th Floor, New York, N. Y. Speakers: W. S. Thornbill, Shell Development Company, "New Chemicals by Shell"; T. J. Thompson, Corning Glass Works, "Wartime Developments in Industrial Glass."

- May 13. THE AMERICAN INSTITUTE OF CHEMISTS. Annual Meeting. Hotel Biltmore, New York, N. Y.
- May 23-25. American Association of Cereal Chemists. Nicolett Hotel, Mineapolis, Minnesota.
- May 25. Baltimore Chapter. THE AMERICAN INSTITUTE OF CHEM-ISTS. Loyola College, Baltimore, Maryland.
- June . Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEM-ISTS. Ohio State University. Columbus, Ohio.
- July 14. Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEM-ISTS. The Engineers' Club. Dayton, Ohio.

- Aug. 11. Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEM-ISTS. The Engineers' Club. Dayton, Ohio.
- Sept. . Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEM-ISTS. University of Cincinnati, Cincinnati, Ohio.
- Oct. 7. Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEM-ISTS. Business meeting. Dayton, Ohio.
- Nov. . Miami Valley Chapter. THE AMERICAN INSTITUTE OF CHEM-ISTS. Ohio State University, Columbus, Ohio.
- Dec. . Miami Valley Chapter. The American Institute of Chemists. University of Cincinnati, Cincinnati, Ohio.

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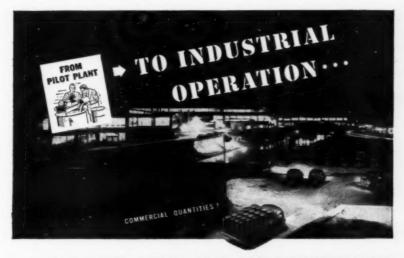
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Delivery Rate											Maximun Pressure					
200 to 50	0	п	ıl		p	e	r	h	ſ.		0	9	9		25 psi	
500-1000																
1000-1500												0	0	0	10	
1500-2000					۰										5	
2000-2200																

VISIBLE DISCHARGE — The graduate, serving as a charger, permits observation of actual quantity of liquid discharged. It is not only possible to determine the discharge rate, but to check volume of discharge from graduate during any desired interval.

CONSTRUCTION—Drain cock is included for emptying graduate when desirable. Mo-



tor is sparkless, induction type. Housing for pump is cast iron, with baked-on Kem resist finish. Since bellows and valves are of brass and bronze, pump should not be used for liquids which will affect or be affected by such metals.

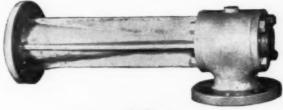
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